Telephony.

THE AMERICAN TELEPHONE JOURNAL

PUBLISHED EVERY WEEK
BY TELEPHONY PUBLISHING CORP.
608 S. DEARBORN ST., CHICAGO, ILL.

AUGUST 15, 1925. [VOL. 89. NO. 7.]
Entered as second-class matter Sept. 4, 1903, at the post office at Chicago, Ill., under act of March 3, 1879.

SINGLE COPIES 10 CENTS
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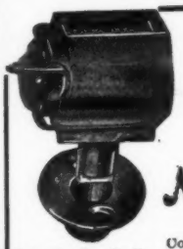

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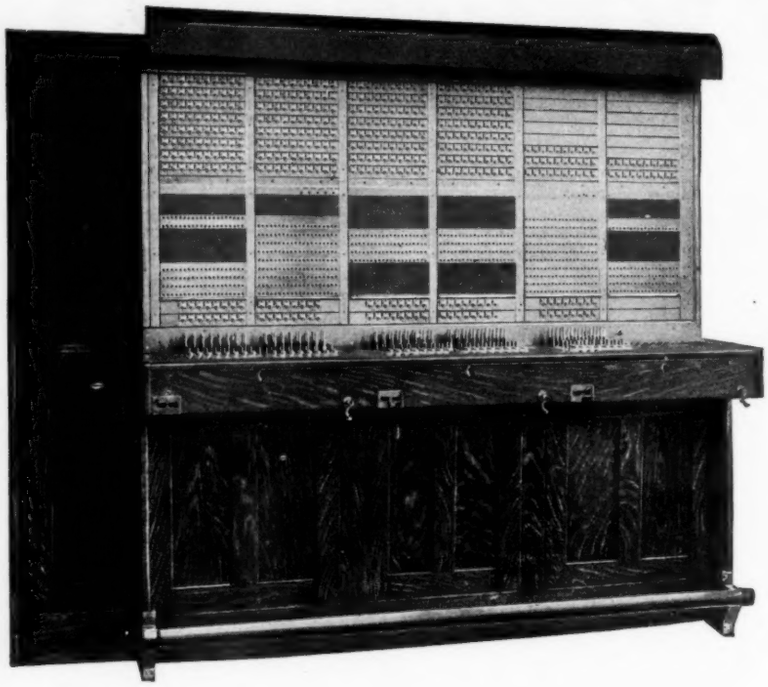

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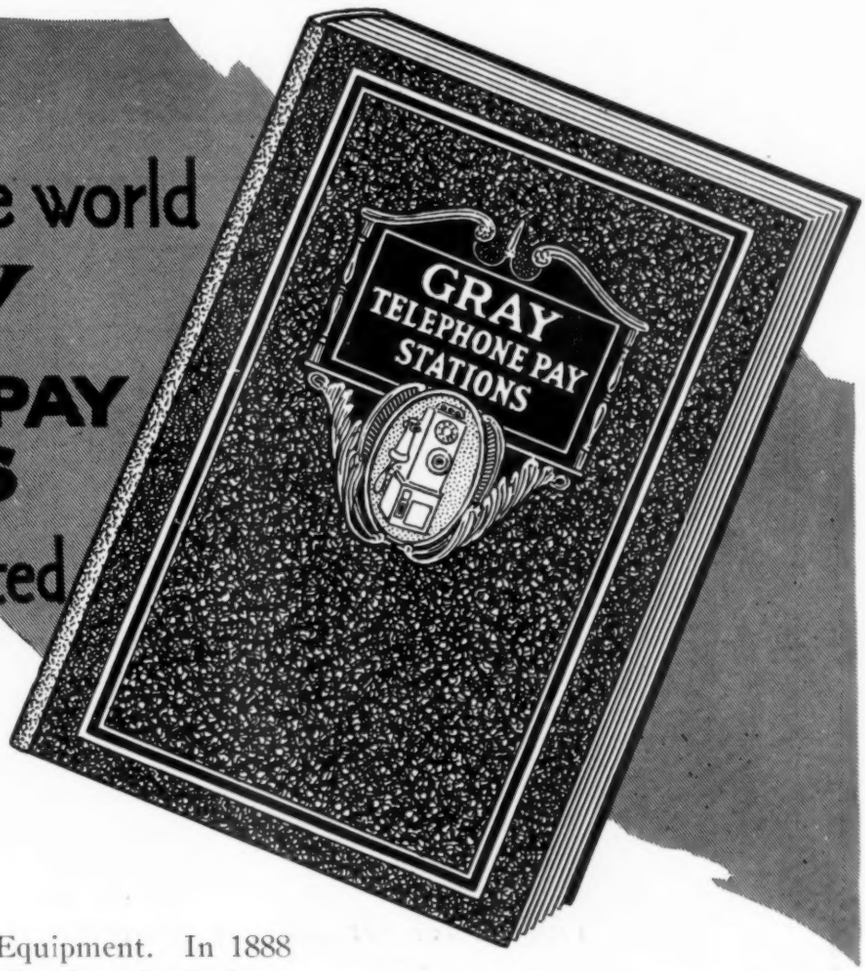

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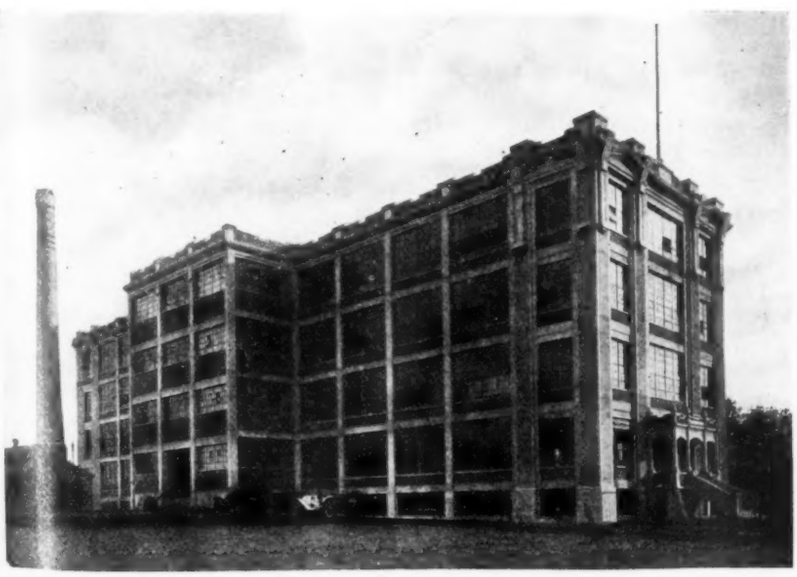

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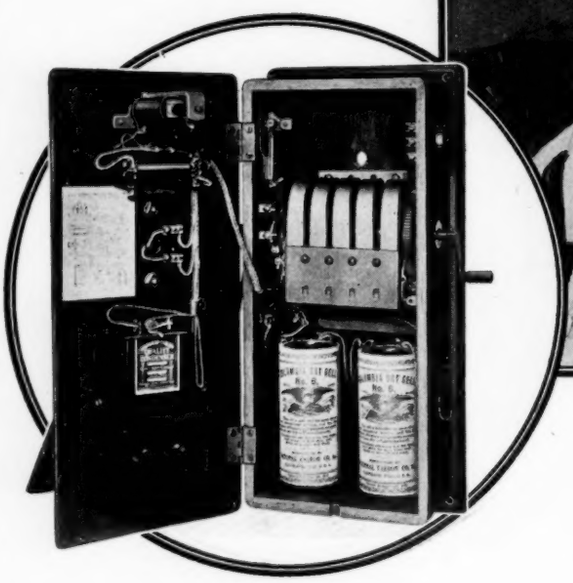

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THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves
PUBLISHED WEEKLY BY TELEPHONY PUBLISHING CORP.
608 S. Dearborn St., Chicago

H. D. FARGO, President and Treasurer
S. R. EDWARDS, Editor and Secretary

J. R. HASTIE, Vice-President and Advertising Manager
H. D. FARGO, Jr., Western Advertising Manager

Entered as second-class matter September 4, 1908, at the postoffice at Chicago, Ill., under act of March 3, 1879.

Volume 89
Number 7

CHICAGO, SATURDAY, AUGUST 15, 1925

Subscription—10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

ECONOMIC FACTORS IN TELEPHONE RATE MAKING RECOGNIZED

From time to time reference has been made in TELEPHONY to the large sums which telephone companies pay out in taxes. Only recently it was pointed out that the Michigan Bell company annually pays out $4.47 in taxes for every telephone connected with its lines, an increase of nearly 123 per cent since 1920.

Another illustration—this time in the East—is given in the report which accompanies the order of the Massachusetts Department of Public Utilities authorizing an increase in the telephone rates of the New England Telephone & Telegraph Co. of approximately $8,500,000—about one million dollars less than the company asked for in its application.

It is stated that the company estimates that in 1926 its taxes will have increased over 1924 from $1,817,688 to $4,003,000 for that portion of its business returnable to Massachusetts, an increase of about 123 per cent.

"This means," says the commission, "that about 23 per cent or $2,185,312 of the $9,460,000 estimated increased revenue will be required for the payment of increased taxes—thus leaving an increased revenue available for dividends, interest and surplus, of $7,274,688."

* * * *

The matter of taxes of public utilities is a decidedly important one and when the people are shown and fully convinced that increasing the taxes of public utilities in the end results in increasing the rates, they undoubtedly will be inclined to turn their attention to the manner in which the money collected in taxes is utilized.

For the service rendered it undoubtedly would be found that the dollar paid in taxes, when expended for local and state purposes, returns the least value to the people whereas, for the amount expended, the telephone renders the greatest amount of service of anything that is purchased.

* * * *

The report in the Massachusetts case upholds a number of points that have been referred to many times in TELEPHONY columns. It says:

"The people of Massachusetts want adequate telephone service. They cannot have this unless the company can raise the funds necessary for such service and its development. The company cannot do this unless it can maintain its credit. It must, in order to do this, be able to sell large quantities of shares of its stock to its stockholders or others."

The rate of return—that is, the dividend earned and paid to stockholders—determines the price at which the stock of the company sells on the market. In Massachusetts the company cannot under the law sell shares of its stock below par.

The commission believes, therefore, that in order to accomplish the economic results required for the welfare of the telephone users of the state, the company should be permitted, for the present at least, to earn an amount that would allow it to pay a dividend approximately 8 per cent upon its capital stock.

The commission also recognizes a situation, which is true generally of telephone companies not only in Massachusetts but of telephone companies in other parts of the country as well, when it says:

"The company's rates have not been proportionately increased since the outbreak of the World War compared with most other public utility rates or with commodity prices. If the increases it asks for in the new tariffs it has filed are allowed its total increase since January 1, 1914, would still fall short in the advance of most public utility rates and the rise in the price of commodities."

That is a fact to whose truth, we believe, telephone managers all over the country can testify. Telephone rate increases average much lower than the increases in the prices of materials and commodities.

* * * *

"Management is a brain-working profession" is a statement that has frequently been made in the past year or so in reference to the solution of the many problems which confront the telephone industry. The question of management also entered into the Massachusetts case and the commission, in answer to the question, "Is the company being efficiently and economically managed?" says:

"This is a very important question; it is also a very difficult one to answer with certainty. The company, of course, oper-

ates through human beings—and human beings are not perfect. It follows, therefore, that there must be room for improvement in their methods and practices."

The latter, of course, is in effect the old saying, "We cannot stand still. We must move—either forward or backward." And a telephone company to be successful must always go forward.

* * * *

TELEPHONY has repeatedly emphasized that if service is good, the public is willing to pay for it, but that it does not wish poor service at any price. The Massachusetts commission has had a great deal of experience with the utility companies under its regulation and it, therefore, speaks with authority when it says, in expressing a belief that the officers of a telephone company should bend every possible effort toward improving the quality of service:

"We believe that the public is willing to pay reasonable telephone rates. What it is most concerned about is the quality of service. . . . Good service is what the public wants, and we believe if that service to which it is entitled is given, it will not complain of the rates necessary to give that service."

* * * *

In stating its conclusions that increased rates are essential, the commission develops a point of which other state commissions may well take cognizance, in passing upon applications for increased rates. The commission says:

"It was conceded at the hearings that the company now needs a very substantial increase in revenues, and there can be no question, we think, that this condition will continue for some time to come. We are in the fortunate position of being able to deal with a matter flexibly and tentatively and not rigidly and for all time.

If the contention be true that in a few years the company's present rates will be adequate, when that takes place any increase in rates now given the company can be reduced accordingly. Indeed, that day will sooner come to pass if the company meanwhile be allowed revenues sufficient for its present needs; and that day will undoubtedly be deferred by forcing the company meanwhile to run up deficits, injure its credit and hamper its development."

COMING CONVENTIONS.

New Hampshire, Keyser Lake, North Sutton, Huntoon House, September 17 and 18.

Indiana, Indianapolis, Claypool Hotel, September 22, 23 and 24.

United States Independent Telephone Association, Chicago, Sherman Hotel, October 13-16.

In recognizing all of the economic elements which necessarily must be taken into consideration in fairly and honestly passing upon a rate application and issuing its order based upon those factors, the Massachusetts commission is to be commended.

* * * *

The business organizations in Boston virtually admitted, during the hearings that the rates should be advanced and advised the public to put full confidence in the utilities board. The board's job was to determine what was fair, and nine months were occupied in hearing and weighing evidence presented by the company and by the remonstrants. The decision was the state board's best judgment upon what was fair for both sides, the company and the public.

While some of the public may, and undoubtedly will, object to paying the increased rates, there is no question but that the commission has made a ruling which will be upheld by the law and the courts and one that will work out to the advantage of the public in the long run. In several states, companies are operating under rates protected by federal injunction, due to commissions not protecting the companies in permitting them to earn what they are guaranteed by the federal constitution—"a fair return upon their investment." Politicians cannot get around that.

Trees on the Highway and the Wires

Growth of Importance of Tree-Trimming Problem With Great Improvement of Highways—Suggestions for Showing Laymen Need for Trimming—Methods of Removing Interference—Address at the Minnesota Telephone Convention

By E. J. McGrath,

Division Maintenance Supervisor, Northwestern Bell Telephone Co., Minneapolis, Minn.

Telephone service has grown to be an indispensable adjunct to American life, and for this reason there rests with the telephone companies of the country a great responsibility to assure that a high standard of service is maintained.

The quality of service has steadily improved and the people whom we serve have grown to demand the best that we can furnish and justly so. With the greatly increased usage and with the widening of its field of application, their insistence for better service has been a natural result. Our telephone-using public today demands dependable service, and it is the moral obligation of the telephone companies to furnish this brand of service.

Among a large number of factors responsible for poor service, I personally feel that tree interference should be least tolerated because it is one of those things almost 100 per cent within our control. Its very commonness often tends to create laxness.

In comparatively recent years the problem of tree trimming has grown in importance. A few years ago our highways were mere trails used mostly by horse-drawn vehicles. With the advent of the automobile and the subsequent increase of traffic, it was found necessary to widen our highways. Prior to the time these improvements were made to our highways, many of our telephone lines were built on them.

In those early days of line construction it was usually an easy matter to avoid bad tree conditions by either removing the trees or adjusting the line to avoid them. However, under modern road construction methods we usually find the roadways bordered with a ditch for drainage purposes which usually extends to within five feet of the property line. This construction makes it necessary for the telephone company to build its lines within the confines of this five-foot area.

From this it will be seen that our location on the highways is pretty definitely established, with no alternative, except to use private right-of-way if unfavorable tree conditions are encountered. This, of course, would make the cost of telephone service prohibitive and, therefore, greatly limit its use.

Today we find much of the property adjoining highways improved and in many

instances rows of trees planted along the property line for ornamental and shade purposes. This, in a large number of cases, brings our wires into contact with the trees.

Civic organizations in a number of localities have sponsored movements for planting trees along our highways as a means of beautifying them. Such movements should be watched closely so as to assure that trees are not planted under telephone wires. I have found that when made familiar with the trouble which would eventually result from such planting, these civic organizations are glad to cooperate, either by planting the trees back from our lines or planting them on highways telephone lines do not follow.

In the rendering of good transmission over telephone lines, one of the greatest difficulties we have to contend with today is the interference caused by trees. In order that the average layman may understand the harmful effects to telephone service by allowing telephone wires to come in contact with trees, I have arranged a number of sketches to illustrate this point. These are used in conferences with civic organizations and individuals regarding tree trimming.

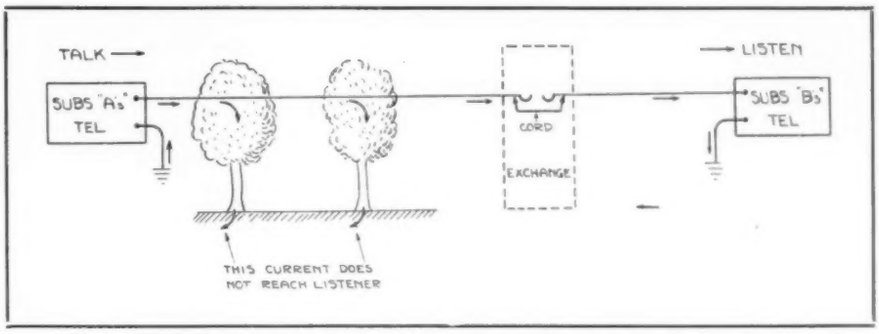


Fig. 2. Loss in Telephone Current, Due to Leaky Wires.

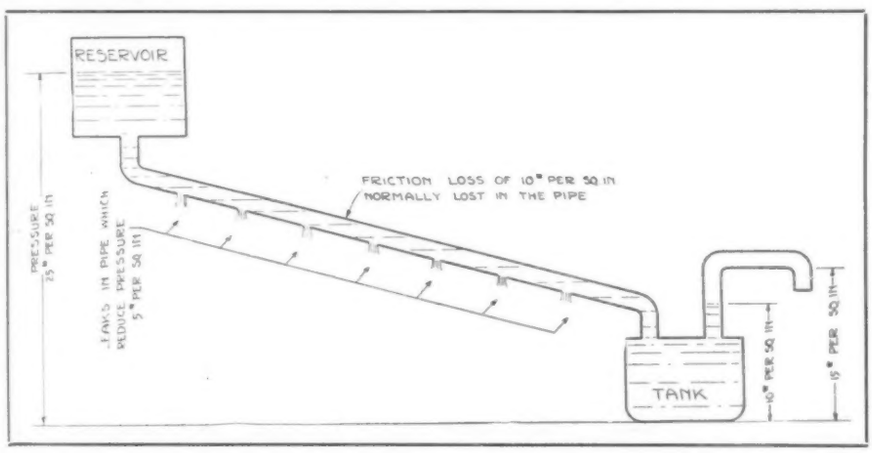

RESERVOIR
FRICTION LOSS OF 10# PER SQ IN NORMALLY LOST IN THE PIPE
PRESSURE 25# PER SQ IN
LEAKS IN PIPE WHICH REDUCE PRESSURE 5# PER SQ IN
TANK
10# PER SQ IN
15# PER SQ IN

Fig. 1. Loss in Water Pressure, Due to Leaky Pipes.

A water reservoir supplying water through a service pipe to a tank some distance away is shown in Fig. 1. The pressure in the reservoir is rated at 25 pounds per square inch under normal conditions. After deducting a normal friction loss of 10 pounds pressure per square inch offered by the service pipe, we should have a pressure of 15 pounds per square inch in the tank. However, due to a number of leaks in the service pipe, we find that we have only a pressure of 10 pounds per square inch, which is not sufficient to force the water through the outlet pipe.

Fig. 2 shows a telephone line between two exchange subscribers connected to the central office. When "A" starts to talk with "B," he sends out from his telephone over the wires a certain amount of current or energy which enables "B" to hear him. As this amount of current is very small, it is necessary that nothing interrupt it in order that as much as possible will reach "B." However, due to trees touching the wires to "A's" telephone, a certain amount of current is either shunted out or is absorbed by the trees and carried into the earth, with the result that "A" has to speak very loudly into his telephone to make "B" hear; and if too much of the current is lost, it will be impossible for them to carry on a conversation.

From Figs. 1 and 2, it will be seen that as all the pressure caused by the water is needed to force it through the outlet pipe, so the current sent from one subscriber to the other over the telephone line is necessary to enable them to converse.

A case of two subscribers served from the same exchange, each being about an equal distance from the office over two different routes, is shown in Fig. 3. These subscribers lived about one mile apart. The writer, while visiting one day at subscriber "A's" home, was asked if he would care to ride over to subscriber "B's" residence before driving to town.

On inquiring as to why the trip was being made, subscriber "A" answered saying that he wished to talk over certain matters with his neighbor. Asked why he did not use the telephone, he stated that he had such great difficulty in making "B" hear him that he usually drove over. Then I attempted to talk with "B," but was unsuccessful.

The trip was made, and in driving to town from "B's" residence, it was found that the line to his telephone had a large number of trees growing up into it, causing so much leakage that it was difficult to hear. In this case, "A" had to drive two miles each time he wanted to talk to his neighbor because of the poor transmission caused by tree interference.

Fig. 4 shows the result of heavy tree leakage on a toll connection. Subscriber Brown in exchange "A" places a long distance call to Subscriber Smith in exchange "B." After the connection is established, Brown cannot hear Smith, although he has no difficulty in hearing the operator at exchange "B."

The reason for this is that on the line to Smith's telephone there are a large number of trees grown up into the wires, taking so much of the current that that which does reach Smith's telephone is not sufficient to permit Smith to hear or make himself heard. The result is that the toll

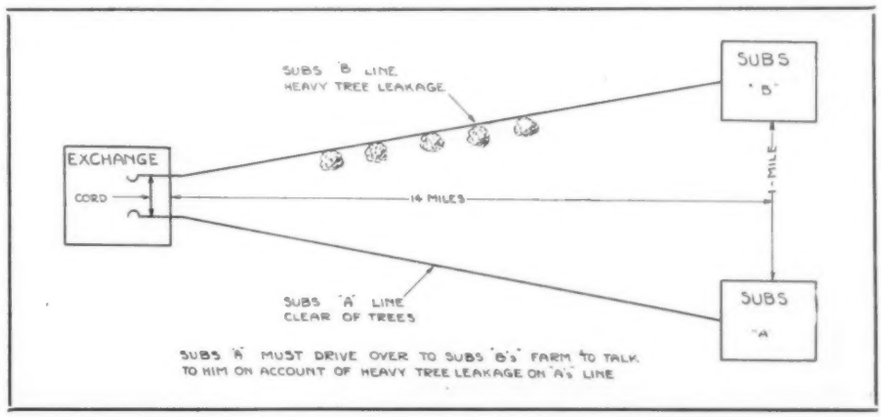

SUBS "B" LINE HEAVY TREE LEAKAGE
SUBS "B"
EXCHANGE
CORD
14 MILES
1 MILE
SUBS "A" LINE CLEAR OF TREES
SUBS "A"
SUBS "A" MUST DRIVE OVER TO SUBS "B's" FARM TO TALK TO HIM ON ACCOUNT OF HEAVY TREE LEAKAGE ON "A's" LINE

Fig. 3. Conditions Illustrating a Case of Poor Rural Service.

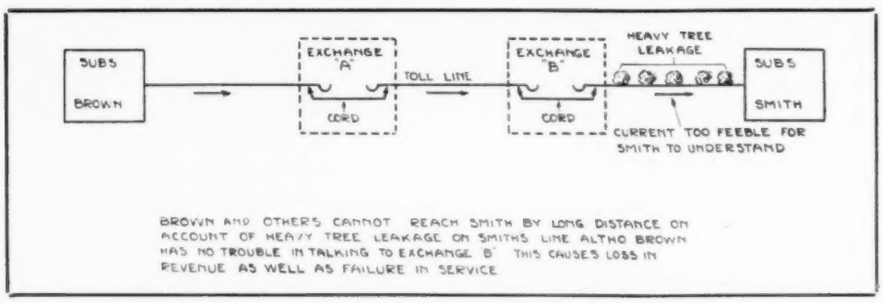


Fig. 4. Result of Heavy Tree Leakage on a Toll Connection.

call has to be canceled, which means a loss in revenue as well as a failure in service. Nor is it fair that while the lines in Exchange "A" are kept free from trees, the subscribers in this exchange cannot talk with subscribers in exchange "B" on account of bad tree conditions.

From the foregoing it will be seen that trees and wires do not mix, so that our problem today is one of finding a satisfactory means of keeping the telephone wires free from trees. In this I think we can be greatly assisted if the public is acquainted with the difficulty encountered in trying to give telephone service where telephone wires are allowed to come in contact with trees.

A number of people are under the impression that telephone men are not lovers of trees. However, I have yet to find a telephone man who does not highly regard the value of trees, and who will not do all he can to preserve them wherever possible. I think we should display this spirit on every occasion.

In dealing with those cases where trees are found to be interfering with the telephone wires, it is well to first consider the kind of trees they are and their value to the owner. If they are trees of no importance and of no real value, arrangements can generally be made to remove them. On the other hand, if they are of importance and are young trees, consideration should be given to moving them back far enough so they will not come in contact with the wires. If the trees are too large to move, it might be possible to plant new trees back from the line and remove the others.

A somewhat typical case encountered is illustrated in Fig. 5 showing in general the arrangement of the average farm with the telephone wires passing in front. The possibilities in the preceding paragraph are applicable in such a case.

It will be found that around many farm homes there is more than one row of trees for wind-break purposes so that it is possible in many cases to remove the row nearest the wires without seriously interfering with the appearance of the place, or causing any loss of wind break. It will also be found that certain trees are of no value. The trees in the pasture can serve as shade for the cattle just as well back a reasonable distance from the property line and should be moved if possible; if not, new ones should be set in farther back.

Experience has proved conclusively that it is far more economical in the long run to either remove the trees, move them back, or plant new ones in place of those removed rather than procure tree-trimming rights. This is true provided, of course, that the price paid for these privileges is not too great. This contention is obvious from the fact that by purchasing outright and removing the source of bad tree conditions, the problem of tree interference is eliminated for all time, while in the case of tree trimming considerable expense is incurred annually in keeping the wires clear.

When it is not found possible to carry out any of the foregoing plans, consideration should be given to securing the greatest possible clearance by trimming. In this connection I personally believe that tree trimming has been resorted to too extensively. In many instances, the result is that during the heavy growing period in the spring, a number of companies are having the problem of trimming a vast number of trees which at the best only affords temporary relief.

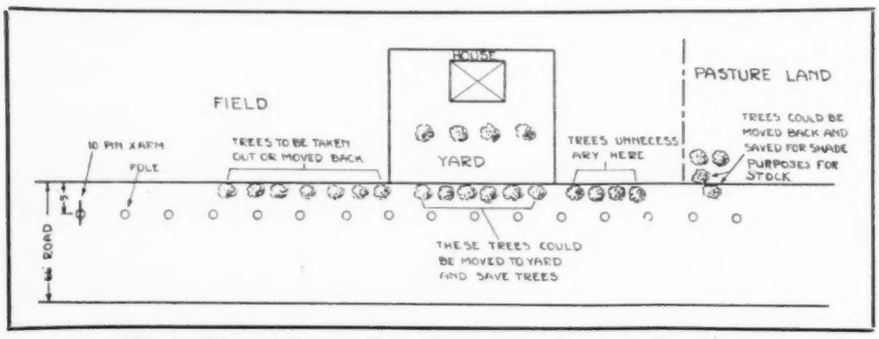


Fig. 5. Typical Case of Tree Interference Around Farm House.

I would suggest, if this is the case, that a definite plan be formulated for removing a certain number of these trees each year. This will spread the expense over a period of years and eventually will bring tree trimming expense to a minimum. The annual cost can be easily regulated.

In the trimming of trees too much cannot be said of the necessity of doing the proper kind of a job. There is no question but that in the past there has been a lot of poor trimming similar to that shown in Fig. 6. Where the trees have either been ruined or their appearance marred, it is not uncommon to find that property owners will refuse trimming permission on the strength of the former job not being done properly. If such cases are encountered, I would suggest a trip with the

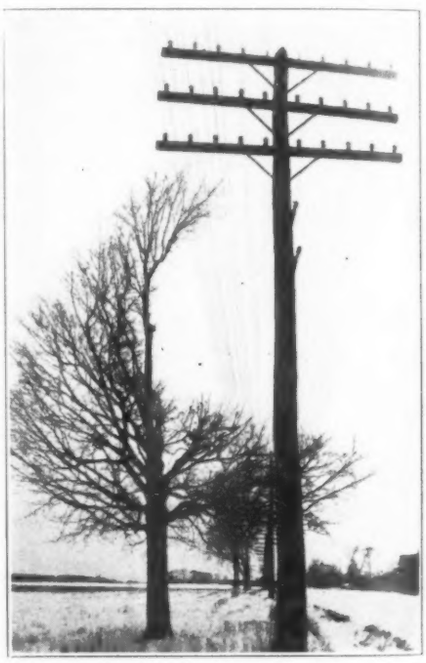


Fig. 6. A Poor Tree-Trimming Job.

owner to a nearby locality to look over a recent job of trimming that has been done properly, in order to prove what can be done by proper trimming such as shown in Fig. 7.

There will be cases found where even permission to trim cannot be secured, in which event the possibility of setting in higher poles, if permanent clearance can thus be secured, should next be considered. If this is found to be impractical, there remains only one other recourse, and that is rerouting the lines so as to avoid the trees.

The last two expedients are often prohibitive because of the large expense involved. We should, therefore, make every effort to realize the more economical means of avoiding tree interference. I believe that very few cases will be encountered where it will be impossible to obtain such privileges if the transaction with the property owner is properly handled.

It is rather difficult to set up a plan to

be followed in regulating tree interference cases as the conditions vary greatly. I do believe, however, that in endeavoring to eliminate any one case, efforts should be directed toward elimination in the following sequence:

1. Obtain permission to remove the trees.
2. Obtain permission to move them back.
3. Remove the trees and plant new ones back beyond the danger line.
4. Obtain permanent tree-trimming rights.
5. Raise wires sufficiently to obtain good clearance.
6. Reroute line to avoid the trees.

The problem of tree interference is a vital one and I believe that the telephone companies all over the country can do much in aiding the solution of this problem by acquainting the public at every opportunity of the necessity of keeping our wires clear if we are to give satisfactory service. If the public could be brought to realize that, in the final analysis, all additions to the cost of giving service eventually revert to them either in the form of poorer service or greater cost, much of our present trouble would be eliminated.

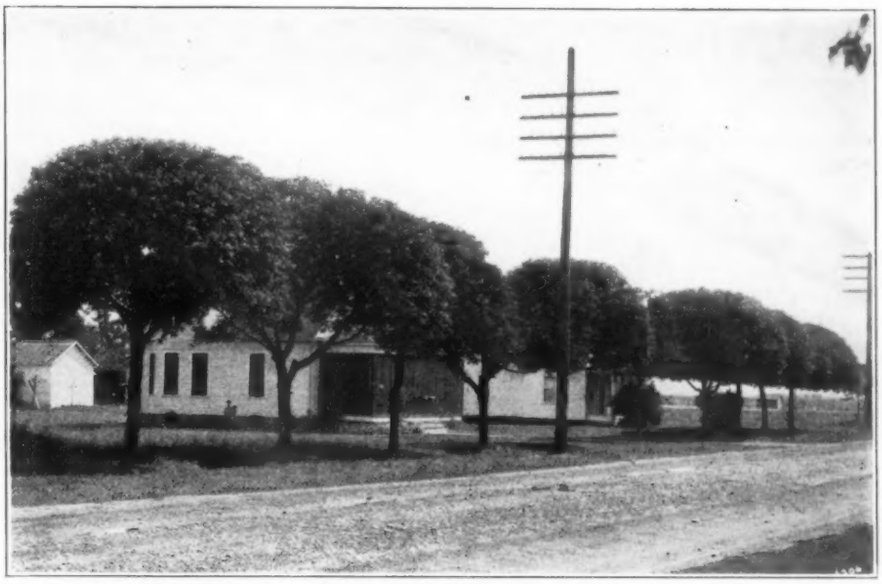


Fig. 7. Illustration of a Proper Tree-Trimming Job.

C. B. Ford Purchases Flickinger Interests at Kingfisher, Okla.

Controlling interest in the Kingfisher (Okla.) Telephone Co., formerly held by M. M. Flickinger, was transferred as of August 1 to C. B. Ford, formerly general manager of the American Telephone Co. of Holton, Kans.

Mr. Ford planned on moving to Kingfisher August 15, and will succeed Mr. Flickinger as president and general manager. Meanwhile the property is under the management of Mrs. Lulu Shaw Grimes who has assisted Mr. Flickinger in building the plant up to its present size and efficiency and who is being retained by Mr. Ford.

Batchtown and Brussels (Ill.) Telephone Companies Merge.

A merger has been effected of the Batchtown Telephone Co. and the Brussels Telephone Co. under the name of the Batchtown Telephone Co., with headquarters at Brussel, Ill. The new organization has filed incorporation papers with the secretary of state. T. F. Narup is manager of the properties.

Japanese Government Plans Expansion for Next Five Years.

The Japanese government has worked out a comprehensive long-term plan for the improvement of the telephone system of the country, according to Consul J. W. Ballantine, Tokio.

More than 50,000 new telephones will be installed each year during the period of 1925-30, as well as an average of 10,000 miles of new toll line per year.

Utilizing Telephone By-Products

A Little Light on the Subject of Making More Money Out of a Telephone Plant Without Any Appreciable Increase in the First Cost or the Annual Charges—Another of Interesting Series of Articles on Telephone Economics

By T. H. Nicholson

The bulk of a telephone company's business is, of course, composed largely of purely telephone contracts with subscribers, together with a more or less extensive toll business from these same subscribers. In addition to this regular business, however, there are several side issues that must be considered.

Some of them can be developed to a very profitable point, while others may almost be considered as unavoidable evils. In any event, careful study should be made of them, not only in the constant effort to *increase revenue*, but also to *avoid embarrassing situations*, to *promote good public and corporations relations*, and, to a considerable extent, to *increase plant efficiency* by greater use of spare plant units.

These side issues may be classified broadly as follows:

Special Service, covering the plant and methods for communications systems for railroads, tramways, power and light systems, police and fire systems, cab, driving, messenger and other similar services, hotel, apartment, public building and other house systems, and so on.

Subsidiary and Connecting Companies, covering the arrangements for toll service, engineering, construction and operating methods for small rural community systems, rural and farmers' lines, isolated industrial plants, etc.

By-Products, covering the sale and servicing of extension telephones, individual private lines, restaurant systems, call bells, booths, special desks, time service, etc.

Pay-Station Service, covering the study of pay-station provision to reduce public use of private telephones, and to increase paid non-subscriber traffic.

Toll Business Development, covering intensive studies to level the toll-line load and to establish new uses for long distance service, such as short period contract, sequence sales service, inter-city listed calls, press wires, etc.

Commercial Service Studies, covering the study of business subscribers' traffic to show necessity of increased facilities, to assist them in efficient use of service, and to arrange for any special service or system indicated, with the general view of increasing business by a better appreciation of it.

One of the most important of these side

issues is that of "Special Services," and this discussion will be limited to the general problems coming under that classification. The others are only outlined here to avoid digressions in this particular study.

Special Service Problems.

In the operation of public utilities and other large scale operations involving either considerable public contact or large physical areas, the ordinary exchange telephone service is frequently inadequate in several respects, and resource has to be had to some special form of communication. The specific form desired may be either telephone, telegraph, telautograph, printer, code signaling, remote control of operating devices, automatic selection of any one of several means, or it may be a combination of two or more of these.

It may be physically impossible to make inter-connections of the channels employed, or it may be that, because of relative urgency, the channel must remain at all times established. Sufficient it is that something different from exchange service is necessary.

It usually happens that those needing such special services immediately decide upon several things. First, that because they know what results they want, they know best how to get those results; second, that if they provide such a system themselves it will cost less, because of the theory that if it pays a service company to furnish such a system it must necessarily cost less to do it themselves; and third, that once the desired scheme is worked out, no further changes are necessary.

Now if the concern is big enough, or if its ordinary activities are somewhat similar, any and all of these thoughts may work out quite well, but taking the subject by and large it rarely pays any concern to entirely disregard the communication companies. Some of the more important reasons why this is so may be indicated as follows:

The communication company has:

1. Established designs to meet any general or detail problem.
2. Specialists to study the several special problems.
3. Choice of apparatus and material to construct plant exactly as required.
4. Knowledge and forces to properly construct and equip such plant.
5. Adequate and efficient forces and methods to properly maintain the plant.
6. Cable, conduit and line facilities to provide channels at a minimum cost.
7. Forces to study operating methods, to constantly supervise and improve the system.
8 Functions to replace obsolete and inadquate plant at a minimum loss.
9. Ability to properly design plant to properly co-ordinate with exchange and toll system at possible contacts.
10. Facilities to combine special and regular systems, and thus avoid duplication and confusion.

On the other hand, telephone managers more or less tight shy of any special problems of this general character. They are afraid that such a proposition will not pay, or that they will become involved in what they consider to be none of their business. In this attitude they are entirely wrong and, instead of avoiding this type of business they should make special efforts to get it.

It is, perhaps, unfortunate that the designation "telephone manager" or "telephone company" was ever used; it should rather be "telecontact" manager and company, or something indicating wire communication in any form within charter rights.

There are several advantages that are gained to the telephone company by fully developing this form of business, and which may roughly be as follows:

1. Making greater use of specialists in all lines, and thereby lessening the cost of this phase on ordinary business.
2 Making greater use of spare plant and capacity facilities.
3. Assuring standard operating conditions, especially transmission at points of contact with exchange and toll systems.
4. Avoiding clandestine use of regular facilities with subscriber-owned plant.
5. Avoiding duplication of wire facilities and consequent hazards.
6. Avoiding possible competition.
7. Making possible better and more complete fundamental plans.
8. Broadening the field of contact for development of toll business and by-products.
9. Increasing revenues beyond ordinarily accepted possibilities.
10. Maintaining valuable contact with other public utilities.

Acceptance of these views means that telephone managers should seek every opportunity of showing how the telephone company can design, construct, maintain and operate any such system more efficiently and at less cost, even with a reasonable profit, than is possible for the users themselves to do.

There are exceptions of course to every rule, however sound, and this problem is no different in that respect. It may happen that the particular device desired is part and parcel of a machine or operating system, in which case the telephone company may only furnish and maintain conductors. Also it may happen that the results apparently desired by the user are totally at variance with known and accepted methods, but usually a satisfactory compromise can be worked out.

An example of this may be shown in the case of the American railroads and their telephone systems. When telephone despatching became established, the value of inter-city telephones on departmental business became evident, and soon the roads were building their own long distance lines. The terminal telephones, however, were connected to the telephone company's P. B. Xs., and the result was a second and independent P. B. X.

Later agreements were made to permit not only extension telephones to be connected to these private long lines, but also under certain restrictions any city telephone at either end. At once transmission, signaling and interference troubles started, and chaos resulted. Eventually what is known as the standard railroad agreement was formulated and adopted by the telephone systems and the railroads, in which all desired results are obtained by the railroads; standard engineering is used, and the railroad system is virtually a part of the public telephone service with definite charges and credits to both sides.

The point is that by a utilization of the telephone company facilities the railroads get even better results than they hoped for, the telephone company gets revenue it never expected, and equally important, the net economics and relations are vastly improved.

The railroad feature is only one example of this phase of by-products, and it may be said that any industry that has activities beyond the four walls of a building is a possible prospect for mutually advantageous arrangements. If the industry in question happens to be a public utility, then the need for joint study is all the more desirable.

Obviously public utilities have, or can obtain, any necessary right-of-way for desired communication systems, and unless they know or are shown the advantages obtained by using the telephone company's system, they are quite liable to go ahead and construct a private system. Once this private system is installed, the loss is beyond recall because, while rented service would probably have been cheaper to them in the first place, it cannot be proved in when the amortization of any junked plant is added to the rented service costs.

PRIME NECESSITIES.

To know every detail, to gain an insight into each secret, to learn every method, to secure every kind of skill, are the prime necessities in every art, craft or business.

No time is too long, no study too hard, no discipline too severe for the attainment of complete familiarity with one's work and complete ease and skill in the art of doing it.

As a man values his working life, he must be willing to pay the highest price of success in it—the price which severe training exacts. — Hamilton Wright Mabie.

The Post Office and the Automatic

Functions of Machine Switching Apparatus—Choice of a System for London—Standardization—Automatic Electric Co.'s "Director" System—Paper Presented before British Institution of Electrical Engineers—Fourth Installment

By Col. T. F. Purves, O. B. E.,
Chief Engineer, British Post Office

Four years ago the development of the "panel" system had reached a stage which placed it far in advance of other than existing systems in respect of suitability for the equipment of the largest cities. The Post Office was eager to start the introduction of automatics in London, as many large new exchanges were required to provide for development and for the replacement of existing obsolescent or inadequate exchanges, and the installation of these important exchanges on the manual system would have had the effect of postponing by many years the ultimate complete conversion of the area to automatic working.

The Choice of a System for London.

The panel system was, therefore, very closely studied and the opinion reached was so favorable that it was decided to proceed as rapidly as possible with the preliminary arrangements for its adoption. It was admittedly both costly and complex; much design and engineering work still remained to be done before it could be said to have reached a state of comparative finality, and many of its features, which had been developed to meet the telephonic conditions of today in New York, could not without modification be applied to the very different conditions of London.

On the other hand it was obviously a system of unbounded possibilities, and no one doubted that it could be made to meet any legitimate service requirement that might arise. A factor not to be overlooked was that it had behind it the high prestige of the American Bell system, which had staked very large financial commitments on its success, and whose able engineers would, for years to come, continue to strain every effort to bring it to perfection.

Plans were prepared for a first panel exchange in London, to be known as "Blackfriars," and at the same time the Post Office started to negotiate an agreement with the Western Electric Co., in accordance with which the manufacture of panel equipment would have been commenced in England under conditions that would ultimately have permitted other British telephone manufacturers to obtain a share of the work.

While these arrangements were proceeding, the sponsors of step-by-step automatic systems had not been idle or asleep, and early in 1922 the Automatic Telephone Mfg. Co. called our attention to a notable development of the Strowger system by the Automatic Electric Co. of Chicago. It had succeeded in devising and combining with the step-by-step system a call-storing and translating scheme, which had endowed that system with practically the same elements of numbering and trunking flexibility that had first been conceived in association with the panel system. To this new development, the name "Director System" was given. The matter was, naturally, one of first-class interest and, although the immediate proposals were in a somewhat embryonic stage, they were at once investigated very fully.

In association with the Automatic Telephone Mfg. Co.'s engineers, a miniature multi-exchange system was laid out in such a way as to cover as far as possible all the different types of service required and exchange conditions met with in London, and was installed at the General Post Office as a working model of the director system. (A similar working model formed part of the Post Office exhibit at the British Empire Exhibition at Wembley.)

Exhaustive study and trial led to the conclusion that the director system contained all the essentials required as a basis on which to frame a complete equipment of circuits and apparatus admirably fitted for the service of such an area as London, and it was evident that a practicable alternative to the adoption of the panel system had become available. In November, 1922, I definitely recommended the adoption of the step-by-step system, with the addition of the "director." The main reasons on which that decision was based may be of interest, and are as follows:

(1)—The first cost of director exchanges was somewhat lower than the probable cost of the panel system manufactured in England.

(2) The fundamental electrical plan of the system is very much simpler than that of the panel. Circuits for particular purposes are easier to design and easier to understand.

(3) The Post Office engineering staff was already familiar with step-by-step systems, and it had been found that men could readily be trained to undertake all the duties of maintenance. The difficulties involved in securing and intensively training the requisite staff for handling the panel system—on the large scale of the necessary program—would certainly have been considerable, and might have involved serious delay.

(4) The apparatus to be employed in the director system was all of existing types which had stood the test of years of actual use, and which could be depended upon to give first-class service. The scheme was purely one of new electrical circuits and combinations. It was possible, even at that early stage, to visualize the lines on which circuits for all purposes might be designed and, in fact, to see right through the eventual London system to a far greater extent than was possible in the case of panel equipment.

(5) The director system applied readily and naturally to small, as well as to large, exchanges and to "satellite"* exchanges as well as main exchanges. The panel system had not been developed with a view to serving small or satellite exchanges. The fact that it could be made to do so was not doubted, but it did not appear that the solution was likely to be an economical one.

This would be a matter of little importance in New York where the dense population of its large business buildings and apartment houses, combined with its high percentage of telephone development, necessitate that nearly all exchanges must have a capacity approaching 10,000 lines. In the "down-town" area of New York many of the exchange buildings will have capacity for four or more exchange units of 10,000 lines each.

In widespread and less opulent London there have to be very many small exchanges and satellite exchanges, and it is essential to have a system which can be applied economically to such conditions. It is estimated that in 10 or 12 years' time there will be at least 130 separate exchanges in the London area. Of these not more than about 50 will be in the business districts of the City and West End, and of this number only about 30 will have an ultimate capacity of 10,000 lines, while about 20 will be limited to 5,000 lines. The remaining 80 exchanges in the area will include about 50 of 3,000 lines, 20 of 2,000 lines, and 10 of 1,000 lines. (In several cases two or three exchange units of 10,000 lines each will be accommodated in the same building.)

(6) The Post Office was already committed to several variations of the step-by-step system on a considerable scale in the provinces. The possibility of using the same system in London replaced the somewhat dismal prospect of adding another and very complex system to the rather divergent group already established, by the much more attractive prospect of being able to standardize a type of automatic system for general use throughout the country.

As a direct result of the adoption of the director system, a large measure of standardization has since been accomplished, as referred to later. It will in

*A "satellite" exchange is one provided only with subscribers' line switches and local selectors, and dependent upon an adjacent main exchange for all manual services and for the routing and handling of all its external traffic.

future be possible to move staff from one district to another as may be necessary, without confronting the transferred men with unknown types of apparatus and circuits in the exchanges.

(7) Prior to the adoption of the director system, it had been ascertained that arrangements could be made for spreading the work among the regular exchange contractors of the Post Office at an early date. The important question of supply was thus greatly eased, as existing British factories became at once available for production purposes. The necessity for placing even the initial orders abroad was avoided, and the Post Office was able to enlist the co-operation of the skilled engineering staffs of all the contractors who had been producers of step-by-step equipment.

The negotiations in hand for the introduction of the panel system were, therefore, broken off and agreements were entered into with the Automatic Telephone Mfg. Co. for the supply of director switching equipment for the equivalent of about 55,000 exchange lines, and with the Western Electric Co., Siemens Brothers and the General Electric Co. for smaller quantities. Provision is made for existing patents and for future patents during a specified period, to be pooled on terms which will enable the Post Office to call upon all the firms to install plant covered by patents in the possession of any of them.

At the end of the period of about three years covered by the contracts, it will also be possible to utilize the services of other competent firms which may desire to take up the manufacture of step-by-step automatic equipment. These agreements cleared the way for standardization of system, and before proceeding to specify circuits and layout a very careful comparative study was made of the characteristics of the systems identified with each of the firms named, of all of which the Post Office had had practical experience.

Subsequent to the decision to adopt the director system, the firm of Siemens Brothers had submitted an analogous development styled the "translator" system, applicable to its type of step-by-step equipment, and at a later stage the General Electric Co. also brought forward a proposal to embody in its system an equipment of devices having the same object, which had been termed the "controller" system.

The "translator" and the "controller" systems existed, for the most part, on paper, but they furnished interesting evidence of the readiness and flexibility with which the long-established step-by-step system lent itself to the grafting on of developments designed to achieve a newly conceived purpose.

Standardization.

It was recognized that the complete standardization of the automatic system for Post Office use could not be effected in a single step without long initial delay and the temporary paralysis of some of our sources of supply. The most pressing need was to secure that all future automatic exchanges should be of such design that they would be able to intercommunicate directly one with another, without requiring the addition of any special devices or circuit complications for the purpose.

First attention was, therefore, given to the standardization of electrical circuits and operating currents for all inter-exchange purposes, and this has now been accomplished. Each contractor is allowed to supply plant of his own type of mechanical construction, but all types must be capable of operating in the prescribed manner on the circuits which represent, for the time being, the standard methods of fulfilling particular functions. It will, therefore, be possible to equip any area, large or small, with exchanges supplied by any contractors who may, from time to time, secure the orders for their installation.

The subscribers' automatic telephone and calling dial, and the operating impulses sent therefrom, are rigidly standardized, and the same applies to all trains of operating impulses and controlling or signaling currents sent from one exchange to another. Much progress has also been made in the standardization of the circuits which are purely internal to an exchange and do not affect intercommunication with its neighbors. All our contractors are also encouraged to unify the details of the mechanical construction of their apparatus as much as possible, with a view to the gradual evolution of a fully standardized Post Office automatic system.

Such standardization has, of course, nothing whatever to do with any ideas of finality or fixation of practice. It simply means that at any given moment there is one standard way of making or doing any given thing. Improvements emanating from any source can be studied and introduced, not in partial and possibly conflicting ways as in a divergent collection of systems, but on a systematic general basis which greatly facilitates effective progress.

The first standardization study soon narrowed itself down to a choice among various important features in which the systems of the Automatic Telephone Mfg. Co. and of Siemens Brothers differed from each other. These features could not, as a rule, be considered independently; to a great extent the adoption of one dictates the adoption of one or more of the others. The decisions on the points at issue were as follows:

(1) Impulses over junction circuits to be signaled round the loop, and not over one earthed conductor.

(2) Supervisory signals to manual exchanges and auto-manual positions to be sent by reversal of battery.

(3) Subscribers' talking and signaling current to be fed to the loop at final selectors or at outgoing junction repeaters.

(4) Main battery to have E.M.F. of 50 volts (25 cells).

(5) Registration on subscribers' meters to be effected by means of a "booster" battery.

(6) Subscribers' lines to enter via 25-point rotary line switches having a "home" position and 24 outlets to selectors.

(7) The "private" banks on the levels of group selectors to have 11 points.

(8) The "busy" test on private bank contacts to be provided by an earth connection.

(9) Trunk-hunting switches to be stepped forward by individual, self-controlled drive.

Six of these points (1, 2, 3, 4, 8 and 9) represent the established practice of the Automatic Telephone Mfg. Co.

With regard to point (5) the department's experience with the Automatic Telephone Mfg. Co.'s standard system of registration—by means of an electro-polarized relay operated by reversal of current when the called subscriber replies—indicates that, although accurate, it requires special testing and voltage-regulation plant to maintain it. For "booster battery metering," which has been adopted as preferable, the subscriber's meter, with the normal exchange voltage behind it, is wired to the "private" or test wire at the subscriber's rotary line switch. The meter is designed not to operate on this voltage.

The "test" wire is linked up successively throughout all the switches used in a connection up to the final selector in the case of a local call, or to the outgoing circuit repeater in the case of a junction call. When the called subscriber replies, the operation of relays at the final selector or repeater applies a separate booster battery of 50 volts to the "test" wire in series with the main battery for about ½ second. The meter operates on this and its armature remains attracted on the normal battery voltage—the test wire being normally earthed at the final selector or repeater. It is confidently expected that this method will give complete immunity from false registration.

It should be mentioned that in "director" areas a simpler method of operating the subscriber's meter is practicable and has been adopted. In such areas the first selector switch, which is next in the train of switches to the calling subscriber's rotary line switch and meter, contains a relay operated by the reply of the called subscriber. A separate conductor can, therefore, be provided, at little cost, between the two switches, enabling metering to be effected by the simple closure of the meter circuit when the called subscriber answers.

The use of subscribers' rotary line switches with a "home" position—point (6)—is made necessary by the system of grading the outlets from the line switch banks to the first selectors. With graded outlets it is, of course, necessary that search over a level shall always start from the first outlet on that level.

The use of an 11th contact on selector levels—point (7)—is dictated by the desire to obtain traffic overflow measurements on each working level.

As soon as the leading characteristics of the general system had thus been deter-

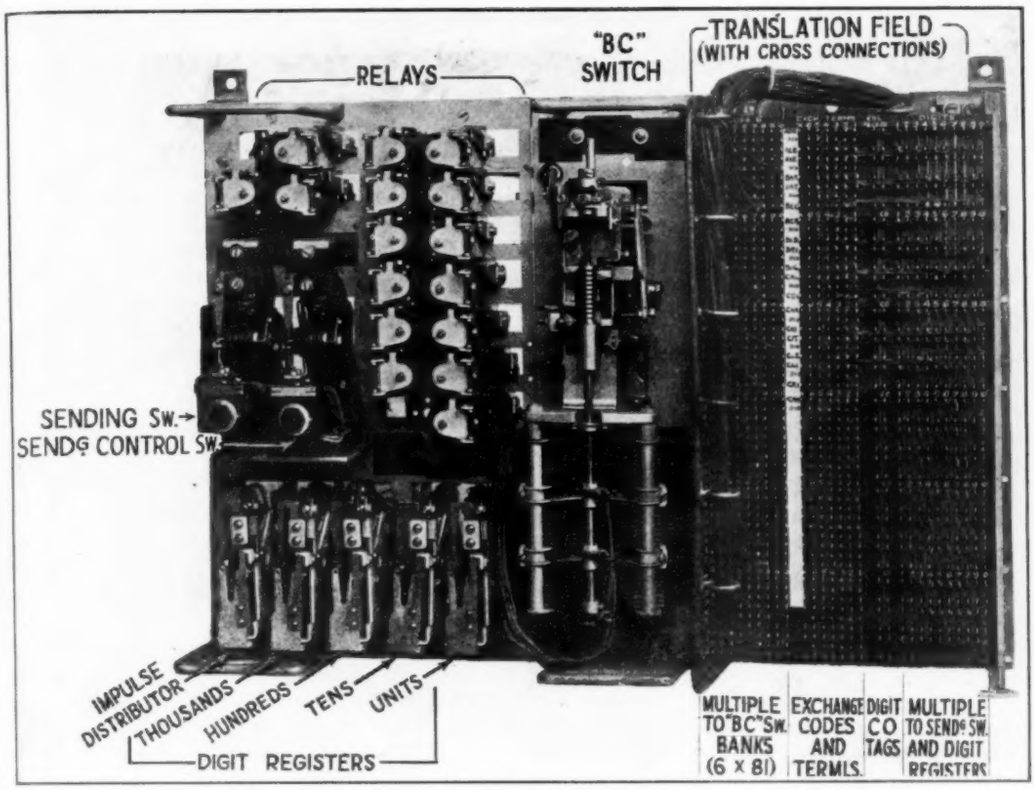


Fig. 16. View of Director Assembly.

mined, the process of assimilating it to the director method of operation, and of designing the circuits and plant layout for all classes of service, began. For many months the engineers and traffic experts of the Post Office automatic group were engaged in almost daily discussions with the engineers of the four large contracting companies who are responsible for the manufacture and installation of the exchange plant. The matter involves the consideration of masses of meticulous technical details, and great numbers of proposals and devices have been suggested, considered, tried out and accepted or rejected.

This work is now complete, so far as the initial system is concerned. Equipment for several large exchanges is now in course of manufacture, and in the cases of the Holborn exchange and the Mechanical Tandem exchange the work of installation *in situ* has been commenced. It may be mentioned that it takes, under present conditions, about six months to plan the traffic and engineering details of a large automatic exchange, about 12 months to manufacture it, and a further 12 months, or more, to install it in position and tune up its circuits for service.

In a field in which invention has been so rich as in that of automatic telephony, it is impossible to choose and standardize a single system without a certain measure of regret that features of great interest and utility associated with other systems have necessarily to be sacrificed. The facilities for large group selection which are inherent in the panel system were not given up without reluctance, although it is believed that an excellent substitute for them is provided in association with the step-by-step system by the methods of grading smaller groups of outlets and, if necessary, interpolating additional trunk-hunting switches, as already referred to.

The "rotary" system of the Western Electric Co. also includes many attractive features which are not applicable to the selected system. The same applies to the striking machine-driven system recently introduced by Messrs. Ericsson of Stockholm and now installed at Rotterdam and elsewhere. The 500-point selector switches of this system and the method of constructing its multiple fields are of great interest to telephone engineers. The Relay Automatic Telephone Co.'s system had also shown itself to be a convenient and economical system, at least for the smaller exchanges.

But these systems all differ fundamentally from the system chosen and could only be made to intercommunicate with it by the addition of costly and complex special devices for interchanging traffic. The inherent complexity of even a perfectly uniform automatic system serving a large area is necessarily such that any deliberate policy of including in it exchanges of radically different type would be almost criminal!

I am far from asserting that the London system will, in 20 years' time, necessarily stand as a model for the world to copy, but I am confident that the adoption of the step-by-step system, with the notable addition of the automatic "director" and other technical developments as worked out for London, represents the most practically suitable and effective way in which the telephonic needs of the next generation can be met in that great and important area.

It is understood that it has now been decided to install a step-by-step automatic system in Berlin, and that the same applies to the system of reconstructed exchanges which will replace those recently destroyed by the earthquake in Tokio.

It has already been mentioned that the addition of the "director" to the long-established Strowger automatic system has endowed that system with facilities which enable any required connection to be set up by means of trains of controlling impulses having no necessary relationship with the impulses sent in from the calling dial of the originating subscriber.

The Automatic Electric Co.'s "Director" System.

The function of the director is to receive and store the call in its original form, and to proceed to send it out into the exchange switching mechanism, translated into any trains of impulses which may be required by the existing layout of junction routes and switching centers, to steer the call through, link by link, to the line of the required subscriber. As soon as the required connection has been established, the director disconnects itself from the line and becomes available for other calls.

The London subscriber's calling dial will carry a combination of letters and digits similar to that already referred to in connection with the panel system, and the arrangement of exchange names and numbers in the telephone directory will also be identical with that adopted for the panel system.

It should be noted here that the translation effected by the director applies not only to the number of impulses in a train but also to the number of trains sent. The subscriber will be required to signal three letters and four digits for each call, but the director can transform these seven impulse trains into any number of directive trains from five to ten. This attainable maximum provides more than adequately for any possible future requirement of the

London system, or of any other system.

The director consists of nine switches with associated relays and a cross-connecting field. Two switches are of the usual Strowger type having vertical and horizontal movements; these are designated the "A" switch and "BC" switch respectively. Two switches are of the pre-selector type and are designated the "sending switch" and the "sending control switch." Five switches, designated "minor switches," are practically small Strowger switches with rotary movements only. Four of these switches are used as digit-storing registers and one as an impulse distributor.

The "A" digit switches are grouped on separate racks and do not form part of the assembly of an individual director, which includes all the other pieces of apparatus mentioned, mounted on a rectangular frame measuring about 24 inches by 18 inches (see Fig. 16).

The "A" digit switch receives the first train of impulses dialed by the subscribers, which corresponds to the first code letter of the exchange required. Each level of the "A" switch is associated with a separate group of directors set apart for effecting connections with exchanges having names commencing with the same, or an equivalent letter, and the "A" switch, having been dialed to a particular level, searches to find the "BC" switch of a free director on that level.

The second and third trains of dialed impulses are received by the "BC" switch; the second train lifts the switch brushes to one of the 10 levels, and the third train rotates the brushes to a particular set of contacts on that level.

The "BC" switch is equipped with six brushes and six separate sets of bank contacts. Thus the dialing of the second and third of the three initial or "code" letters of the required exchange has set the "BC" switch of a director in a particular group to six particular multipled contacts and has closed six circuits which will always be closed by any subscriber who dials that exchange code.

The six circuits thus set up, when suitably cross-connected, enable the switches of the director to send out any desired number of trains of impulses from one to six (each train consisting of any number of impulses from one to ten) and so steer the call by its prescribed route to any required exchange, where the direct operation of the final four trains, representing the numerical digits of the dialed number, will reach the line of the called subscriber.

It will be noticed that the initial letter of the exchange code—absorbed in the "A" digit switch—does not pass into the director and is not subjected to translation. It is found that the total quantity of apparatus required can be reduced by confining translation to the second and third code digits, and setting apart a group of directors to handle calls for the exchanges having initial letters with the same numerical equivalent. The first train of impulses is, therefore, used to select the level of the "A" switch which gives access to the appropriate group (ABC = level 2; DEF = level 3, etc.).

The directors of each group are capable of serving 81 exchanges and, as eight group levels are available on the "A" switch, the total number of exchanges which could be served without mechanical modification of the directors is 648. This is so far above the number of exchanges ultimately required in London that the cross-connection field has been designed to serve 35 exchanges in each director group, or a total of 280.

Even with this reduced number, abundant spare space can be left on the directors appropriated to each three initial letters, to avoid any restriction in the choice of exchange names on that account, although such restriction could easily be applied if necessary.

Under average conditions a director to which properly graded access is provided will carry about 72 calls in the busy hour and will be occupied with each for about 20 seconds. To serve a busy city exchange the installation of from 150 to 180 directors is necessary.

The operation of the director can be examined in more detail with the aid of Fig. 17. The subscriber on lifting his receiver obtains, via the bank of his rotary

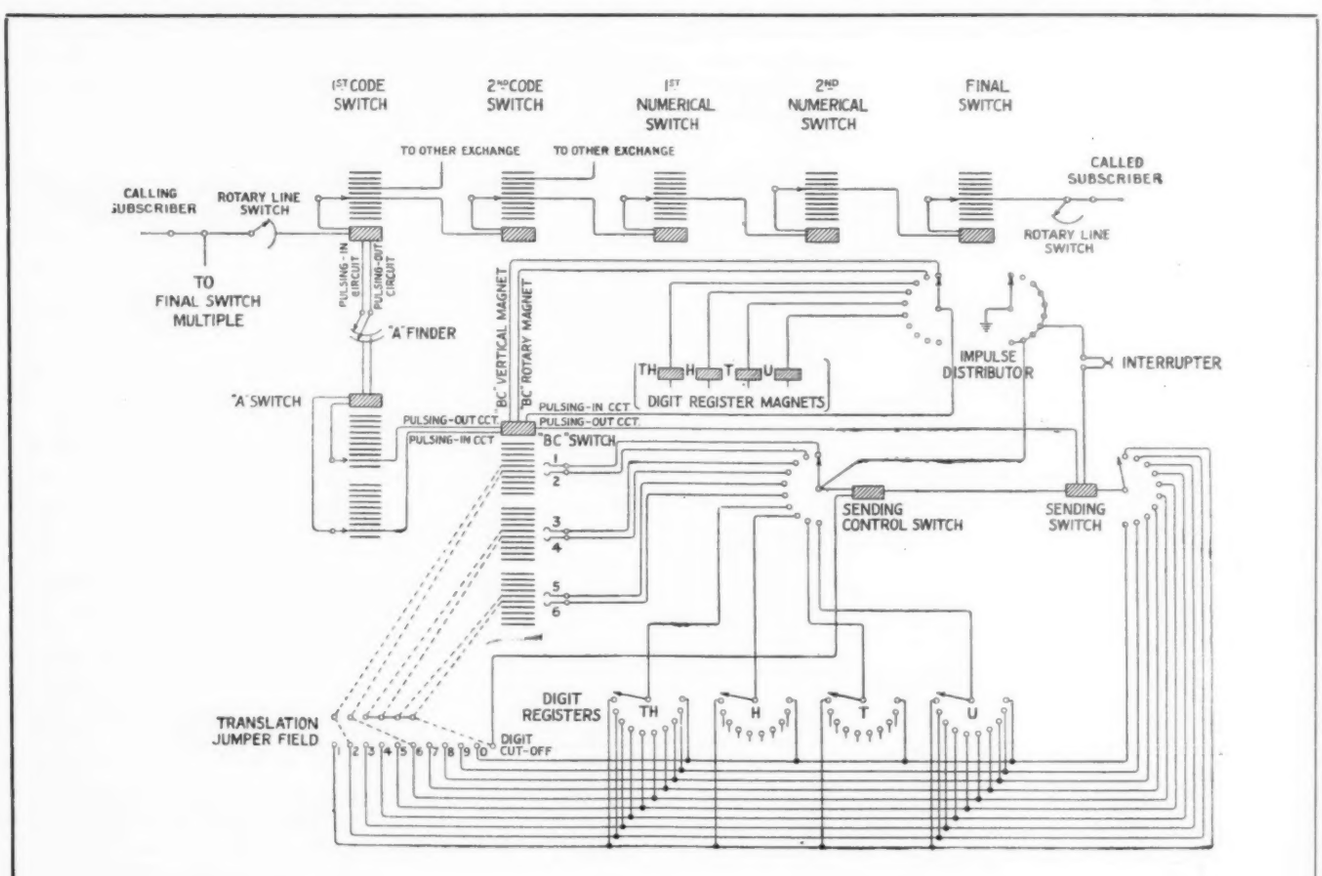


Fig. 17. Principles of the Director System.

line switch, a first code switch in the ordinary exchange system, and at the same time the "A" switch-finder hunts to find a free "A" switch, from which the subscriber receives the "dial" tone informing him that he may proceed to turn in the call.

Suppose the subscriber wants the "Avenue" exchange and dials AVE 2468, which corresponds to 283 2468. The A is received by the "A" switch, the brushes of which are lifted to the second (or ABC) level and a free "BC" switch in the group of directors associated with that level is found. The train of eight impulses corresponding to V is dialed into the vertical magnet of the "BC" switch, via the impulse distributor, the two brushes of which are standing on the first pair of contacts.

At the end of this train, the impulse distributor takes one step and the train of three impulses, corresponding to E, is received by the horizontal magnet of the "BC" switch. The six brushes of the "BC" switch are now set on the third contact of the eighth level in each bank. The impulse distributor brushes now step to its third pair of contacts.

Dialing proceeds and the trains of dialed impulses representing the called subscriber's number are successively routed by the impulse distributor to the four digit registers which are set in the positions 2 on the thousands register, 4 on the hundreds register, 6 on the tens register and 8 on the units register. The call has now been received and stored in the director, but before this operation is complete, the process of sending it forward in its transformed shape has already been begun.

It may be assumed that direct junctions to the Avenue exchange can be reached through two ranks of code switches at the originating exchange and that the translation in the director required to set up these switches is to be "2, 6." That is to say, only two trains of impulses are required, out of the possible six trains provided for, via the six brush circuits of the "BC" switch.

If additional ranks of code switches at an intermediate switching center had been involved, a correspondingly greater number of trains would have been necessary. The translation is effected by cross-connecting the first of the particular six bank contacts of the "BC" switch to contact No. 2 of the "sending switch" bank, and the second bank contact of the "BC" switch to contact No. 6 of the sending switch. The superfluous bank contacts (Nos. 3, 4, 5 and 6) of the "BC" switch will be connected to the "sending control switch," via the terminal marked "D.C.O." (digit cut-off), in order to step that switch to the correct position for discharging the digit registers at the proper moment.

After the three code letters have been dialed in, the impulse distributor brushes will have moved to the third pair of contacts and the sending control switch will be standing on its first contact. The earth-connected brush of the impulse distributor will therefore complete a circuit, via brush 1 of the "BC" switch and the cross-connection, to contact No. 2 of the "sending switch," which will thus be earthed.

At the same moment the earth-connected brush completes a circuit, permitting impulses from the interrupter springs of a continuously running impulse machine to be directed to the sending switch magnet, and the switch begins to step over its contacts. At each step an impulse is sent to the first code switch over the "pulsing-out" circuit indicated in the figure.

When the sending switch brush reaches its second contact, which has been "marked" by the sending control switch, it encounters the earth connection and a relay is operated which prevents further impulses from being sent to the first code switch. The sending control switch now steps forward to the second "BC" brush circuit and the sending switch returns to normal. Meantime the first code switch brushes have entered the second level of its bank contacts and found an outlet to a free second code switch.

The sending control switch brush, now standing on its second contact, makes an earth connection, via brush circuit No. 2 of the "BC" switch, with contact No. 6 of the sending switch. The sending switch again steps forward and now sends six impulses to the second code switch before its impulses are stopped by the earth on its contact No. 6. The second code switch brushes are stepped to level No. 6 and find a free line to the Avenue exchange, while the sending switch again returns to normal and the sending control switch steps to position No. 3.

From this position it finds a circuit in turn, via brushes Nos. 3, 4, 5 and 6 of the "BC" switch, which represent superfluous translation circuits and have all been joined by a cross-connecting wire to the "digit cut-off" terminal. The brushes of the sending control switch are, therefore, carried straight forward to position No. 7. Positions 7, 8, 9 and 10 connect with the four "digit registers" on which the Avenue number of the called subscriber has been stored.

From these positions the switch will now successively control the sending of the thousands, hundreds, tens and units digits. As these do not require translation, the banks of the digit registers are multipled directly to the sending switch. The impulses for these digits are sent out over the junction line to Avenue and set up the numerical switches at that exchange.

Immediately after the units digit has been sent out from the director, the latter is released from the first code switch, all its parts return to normal, and the calling subscriber is connected through to the final numerical switch at Avenue, from which the required subscriber is being rung.

The "pulsing-in" circuit over which the subscriber's impulses pass into the director remains entirely separated, at the first code switch, from the "pulsing-out" circuit over which the director passes forward the call through the code and numerical switches until the connection has been completely set up and the director has been dropped. Pulsing-out commences as soon as the exchange code portion of the number has been dialed in, i. e., as soon as the impulse distributor reaches its third contact and connects earth to the sending control switch and to the interrupter of the impulse machine.

The periods of storing the call and of sending it forward thus overlap each other and the actual delay in establishing connection with the called subscriber is, on the average, only about two seconds greater than it would be if the call were dialed straight into the switches.

As a theoretical example of a more complex case of routing, involving the use of intermediate switching centers and the utilization of all the six available translation channels, it might be assumed that a call, say, from Ealing to Ilford, would be dealt with as follows:

The exchange code ILF (453) would have its second and third digits translated in the director to 234567. Digits 2 and 3 would operate first and second code selectors in Ealing, and gain access via an outgoing junction to a tandem selector in Holborn. Digits 4 and 5 would operate first and second tandem selectors in Holborn and reach a tandem selector in Maryland. Digits 6 and 7 would operate first and second tandem selectors in Maryland and reach a first numerical selector in Ilford. The four untranslated numerical digits of the subscriber's number would then follow and effect connection with the called line via the first and second numerical selector, and a final selector at Ilford.

The actual circuit arrangement of the director system is necessarily somewhat complex, and a discussion of it in any detail is not within the scope of this paper. Mention should, however, be made of an innovation as regards the position of the battery feed to the calling subscribers.

Hitherto on the Automatic Telephone Mfg. Co.'s system this has always been located either at the final numerical switch or on the outgoing junction repeater. In the director system, as adopted by the Post Office, it will be located at the first code switch, thereby rendering outgoing junction repeaters unnecessary, except on tandam routs, and effecting a very appreciable economy in London and other large areas where the percentage of junction traffic is large. *(To be continued.)*

Farmers Mutual of Columbia City, Ind., Completes Cable Work.

The Farmers Mutual Telephone Co., of Columbia City, Ind., has completed the installation of 6,000 feet of cable, 900 feet of it being placed underground.

Handling Service Complaints

Method of Handling Service Complaints Found Successful by Jamestown Telephone Corp.; Records of Several Years Showing Steady Decrease in Complaints—Paper Presented at Convention of New York Up-State Association

By Mrs. Mabel Pearson Sellvin,

Chief Operator, Jamestown Telephone Corp., Jamestown, N. Y.

Every telephone office in the United States that we have ever heard of has service complaints. As a general rule the larger the office the greater the number of complaints. The number and nature of these complaints, as well as the methods or routines followed in receiving and disposing of them, depends to a large extent on:

(1) The general type of community in which the exchange is located.

(2) The size of the community and the number of subscribers served.

(3) The policy of the telephone company in dealing with its subscribers and the general public.

I have been asked to explain how we handle service complaints in Jamestown, N. Y. This discussion is, therefore, limited to that extent.

The policy of our company embodied in instructions from the general manager to all employes handling complaints is: "That the subscriber is always right until proven otherwise." Every person, whether a subscriber or not, is treated with the utmost courtesy and assured that immediate attention will be given to his or her report whatever it may be. The employe endeavors to get all of the necessary information, after which the complainant is dismissed with some such expression as, "Thank you, I will see that this is taken care of as soon as possible."

If the complaint or report is in regard to a telephone or line out of order, it is immediately referred to the plant department. In the majority of cases the trouble is cleared the same day the report is received, often within a few hours. If possible the trouble is cleared immediately.

Special consideration is given to the business telephones. In the case of fire or police department, hospitals, hotels, doctors' residence telephones, an experienced troubleman is sent immediately, no matter what the hour or day of the week. This special repair service is also furnished to residence subscribers in cases of emergencies such as serious sickness, accident, etc.

As one example of the attitude of our company toward its subscribers, we keep on hand a few desk telephones with exceptionally long cords on them. In case of sickness or accident, any subscriber may have one of these desk telephones connected up immediately for bedside service, by simply calling our commercial office. We make no charge for this service.

If a complaint is in regard to unsatisfactory local or long distance service, it is immediately referred to the chief operator. Steps are taken at once to locate the cause of the complaint. If possible the desired connection is established or re-established so that conversation can be completed without further delay.

"That the Subscriber Is Always Right Until Proven Otherwise," Says Mrs. Sellvin, Is Her Company's Policy in Regard to Complaints.

When a complaint, followed up, shows defective central office equipment a trouble ticket is made and sent to the plant department. Proper steps are taken so that this particular equipment will not be used again until it is required.

Cases of improper operating on the part of student operators, or experienced operators who have failed to follow proper routine, are taken up with the individual operator, usually by the supervisor or if necessary by the chief operator, at once. If, in the judgment of the chief operator, conditions warrant an explanation to the subscriber, he or she is advised that the unsatisfactory service was due to defective equipment or improper operating, as the case may be.

Complaints regarding cut-offs and overtime charges on long distance calls need to be adusted very carefully. In our estimation it is better policy to reduce or cancel the charges on a few calls, and keep the good will of our subscribers and other patrons, than to insist that they pay for service which they sincerely believe they have not received. Employes adjusting such complaints, however, must use good judgment, otherwise the telephone companies will be deprived of toll revenues which rightfully belong to them.

Occasionally we receive a complaint which is so indefinite or complicated that it is impossible to determine whether it should be handled by the plant or traffic department. In such cases we request the plant department to make a thorough inspection of the line and the subscriber's and central office equipment. Observations are taken by the traffic department to locate the cause of any such conditions as are complained of. As a general rule, one or the other of the departments locates the cause of the complaint and takes whatever steps are necessary to correct the unsatisfactory condition.

One of the most common of all complaints received is that of interference between subscribers on party lines. The principal causes of these complaints are:

(1) Excessive use of the line by one or more parties who really ought to have a private line.

(2) One of the parties on the line shaking the receiver hook while another party on the same line is talking.

(3) One or more parties on the line listening, making remarks or noises of various kinds, in an effort to interrupt the conversation and secure the use of the line themselves.

We follow up party-line interference complaints with a form letter—an original copy to each subscriber on the line including the party who made the complaint. It states briefly the nature of the complaint received, the rules and regulations which apply to the use of party lines at all of our exchanges, and asks the cooperation of each subscriber on the line in our effort to make the service satisfactory to all. These letters are signed by the commercial superintendent.

If the complaint involves excessive use by one or more of the subscribers on the line, a three-day record of calls from and to all subscribers on this line is kept by the traffic department. In some cases a representative of the commercial or traffic departments calls on one or more of the subscribers involved in the complaint.

When personal calls are not deemed necessary, the chief operator, or one of her assistants, calls the complaining party by telephone, inquiring if the service is more satisfactory. At least 90 per cent of the replies are favorable.

In a large number of cases there has been no repetition of the complaints after all subscribers on the line have received our letters or have been interviewed and shown a copy of the three-day record of calls from and to their line.

On the first of each month, a statement of all service complaints received, showing the complaint in detail, date received, how it was followed up, and what disposition was made of each complaint, is filed with the general manager and the traffic superintendent. A summary for the month of March, 1925, which is a fair average, shows:

Total service complaints received during the month	15
Number disposed of to the satisfaction of party who complained	14
Number unfinished; pending further investigation	1
Complaints due to plant trouble, found and cleared	3
Complaints due to traffic errors, located and disposed of	1
Total complaints due to plant trouble and traffic errors	4
Complaints due to improper use of telephone by other subscribers	11

We aim to furnish a very high grade of local and long distance service to all our 9,000 stations. Records which we have kept accurately for several years show that the average number of complaints each month has been gradually reduced. From results obtained we believe that we have the proper method of handling service complaints at Jamestown.

Single Service in Meadville, Pa.

Bell Lines Cutover to Plant of Meadville Telephone Co.—Prominent Citizens Take Part in Ceremonies Ending Competition Between Bell and Independents—History of Independent Company Which Now Has Field to Itself

At 10 p. m., July 31, two-company telephone service of Meadville, Pa., became a thing of the past, for at that hour the former Bell stations were cut over to the lines of the Meadville Telephone Co.'s new exchange.

Vice-President and General Manager John H. Wright, in charge of the informal ceremony that marked the consolidation of the Meadville Telephone Co.'s and the Bell company's systems, briefly explained the event that was to take place, marking the final step in the merger. Mr. Wright then gave the order for severing the approximately 1,000 wires to former Bell stations, and immediately William R. Lunk, secretary of the Chamber of Commerce, pulled the first switch in the final act.

At 10:50 Herbert R. Walrath, president of the local chamber of commerce, made the first connection and the new service was in effect. A large company crowded around Mr. Walrath as he made the connection, and they viewed with interest the initial operation in the merger.

Mayor Reynolds briefly responded in behalf of the City of Meadville to the remarks by Mr. Wright, congratulating the officials of the consolidated company for the improved and unified telephone service Meadville is to receive hereafter.

The mayor was followed by B. F. Miller, Jr., president of the Meadville Rotary Club; H. A. Boyer, president of the Kiwanis Club; E. W. Kelley, president of the Lions Club; L. E. Whiting, manager of the Meadville Telephone Co., and Otto Kohler, one of the incorporators of the Meadville Telephone Co., in 1899. Other brief speakers were Herbert R. Walrath, president of the Chamber of Commerce; Judge Frank J. Thomas, C. Montague, of Pittsburgh, Bell telephone company; Ex-Mayor E. W. Lawrence, Meadville; William S. Bailey, Jamestown, N. Y.

The Bell company was represented by C. S. Krouse, superintendent of plant; E. A. McDonough, superintendent of traffic, and C. Montague, commercial manager, of Pittsburgh, and D. C. Chisholm, plant superintendent, and J. B. Burnside, plant inspector, of Erie.

Extent of the Service.

The Meadville Telephone Co. now operates 14 exchanges and serves more than 6,000 stations in Meadville and its vicinity. In addition to the Meadville exchange, there are included exchanges at Cochranton, Conneaut Lake, Conneautville, Fredonia, Hartstown, Linesville, Saegertown, Sandy Lake, Sheakleyville, Spartansburg, Stoneboro, Townville and Utica.

In preparing its equipment to meet the greatly increased demands upon its augmented service, the Meadville Telephone Co. has extended its underground conduit system until this permanent construction has become the largest of a city of its size in Pennsylvania.

Additional new copper circuits have already been extended in every direction throughout the company's area, including the exchanges at Linesville, Conneaut and Cochranton.

Complete Equipment.

On May 15 the Meadville Telephone Co. occupied its new building at 229 Arch street, which, with its equipment, represents an investment of more than $125,000. With its 12,000 square feet of floor space it has been planned to afford ample space for the projected growth of 25 years to come.

The building and its equipment represents the last word in telephone practice. In its construction the sole aim has been practicality, with no thought of ornamental embellishment. The building throughout is fireproof, including even its furniture, and it is of the most solid type of construction that modern building plans embody. The company's store of equipment is kept in orderly arrangement on steel shelving in large basement stock rooms, with locker rooms, toilet and shower bath facilities for the men.

On the first floor are the company's main counting room and lobby, with manager's private office. The second floor contains the large terminal room, storage battery room and engineer's office. On this floor there is a large and amply furnished restroom for the women operators, with kitchen and dining facilities for the young women. The major portion of the third floor is occupied by the switchboards, local and long distance, with a directors' room and an office for the chief operator.

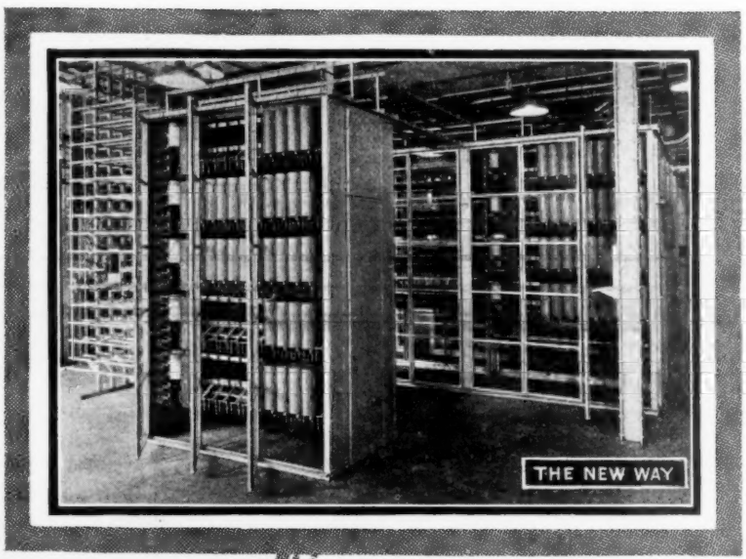
The building contains every modern equipment that convenience can suggest and one is impressed by the ideal surrounding and environment for those who serve the public in giving telephone service.

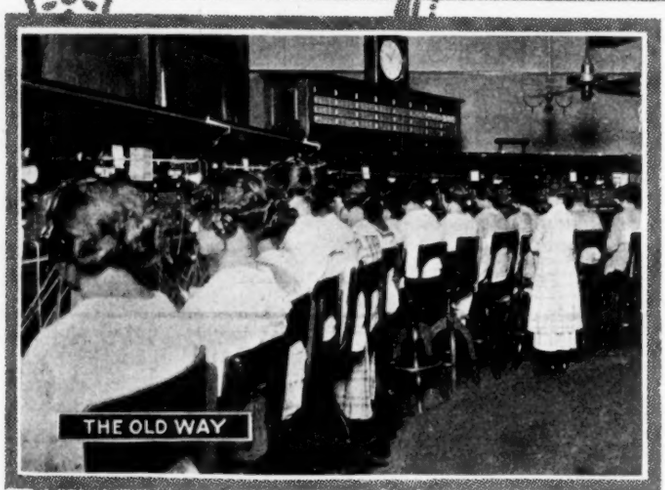
The local company at the time of the merger was the result of the consolidation of four telephone companies, viz., the Meadville Telephone Co.; the Crawford Mutual Telephone Co., Conneautville; the Eastern Crawford Telephone Co.; and the Western Crawford Telephone Co. These companies were merged in 1921.

The present merger of the Bell company's local system with the Meadville Telephone Co., is the result of an interesting chapter in the history of telephone legislation in Pennsylvania. The state law of 1874 which applied to both telegraph and telephone companies, prevented the merger of either.

In order to make possible the merger of telephone companies giving duplicate service to the same area, it was necessary to secure legislation enactment. This legislation campaign was carried on for four years, during which time three appeals were taken to the Supreme Court, Judge F. J. Thomas representing the Independent telephone interests. Finally, in 1921, the present law was enacted. Under its terms the merger of the telephone interests,

(*Please turn to page* 28.)


THE NEW WAY


THE OLD WAY

Subscribers Who Know the New Way Are No Longer Content With the Old

If traffic flowed in a steady stream instead of unforeseen rushes; if telephone employes never asked more pay, were never sick, and were content to stay in one position instead of seeking better jobs; if people always spoke clearly and never mumbled; if human hands were never subject to error and human minds to fatigue—

The old way of handling telephone calls might then obtain.

But telephone subscribers everywhere are fast becoming acquainted with dial service. They know that it is more convenient, more accurate, that it saves many minutes every day. In fact, they like Strowger automatic service so well that in many cases they have indicated a willingness to pay a higher rate in order to get it.

That is why it pays telephone companies to adopt the new way—the Strowger Automatic way.

Forward-looking telephone companies are preparing now for Strowger Automatic operation by adopting Type 21 Common Battery telephones fitted with blank dial plates, the desk stand having the standard automatic offset stem. This means a substantial saving when conversion to automatic is finally made. Write for bulletin and prices.

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Safety Methods in Telephone Work

Last of a Series of Articles on Safety Methods in Telephone Work—Necessity of Manager Having Working Knowledge of Approved First Aid Methods and Being Equipped With Proper Material and Supplies for Taking Care of Injuries

By A. W. Hill

Probably in no other trade or calling is there more reason for having a good working knowledge of approved first-aid methods than in telephone work; not with the object of dispensing in any degree with expert professional service but to be able to render skilled assistance in those first few moments after the occurrence of an accident which often means so much in relieving suffering and possibly more serious after effects.

It is the duty of every manager, regardless of the size of his organization, whether it be large or small, to see that every man in it is instructed and trained by practical methods, so that he may be fully competent to treat anything in the nature of an ordinary injury he may come across.

The American Red Cross handbook furnishes everything necessary in the way of text and illustrations, and a local physician may be secured in every locality who will be found interested in such work and willing to give a helping hand in explaining any problem that may not be perfectly clear.

For a number of years past it has been customary for a number of large corporations—not by any means confined to those in public utility work, but including large steel and mining companies—to group their men in teams, comprised of five or six men each, and after having them thoroughly instructed and practiced in first-aid methods and test problems, to enter them in a competitive contest for some prize or trophy.

Of course, this method could not be readily put into effect by very small companies that employ only a few men. Of necessity, under such circumstances, individual training would probably be the better course. But for those employing, say, ten or more men, the team idea can be worked out to a decided advantage, for in teamwork it becomes more of a game than a task, and the spirit of competition adds zest to it without in any way detracting from the benefit derived. In fact, most of us, regardless of age, are only boys grown up, and save for the fact that we must uphold a certain more or less self-imposed dignity, we enjoy playing games about as much as we did in our youth.

These team problems while adding zest to the study of first aid also serve the dual purpose of inspiring fresh efforts to play the game safe. For example, as we practice an event, let us visualize just what happened to make this bandaging and splinting necessary, such as the following:

A repairman, sent out to repair a drop loop which crossed a flat house roof, found the open to be three feet higher than he could reach. Having no ladder, *to save time*, he secured a store box to stand on. The box tipped over, with the result that

Typical First Aid Box.

he was thrown through an adjacent skylight, sustaining these injuries:

A cut, four inches long on the right forearm; bleeding in spurts and jets; lacerations of both hands and the right hip, and a broken left ankle.

Straightway there comes to mind the number of times we have flirted with the undertaker by using makeshift scaffolding instead of using the proper ladder or step-ladder.

Imagine in each problem that the patient is a person with real injuries sustained through just some such piece of carelessness as is practiced every day. Then put yourself in his place as the victim of a real accident. The psychological effect of such practiced realism will go a long way toward accident prevention.

In the preceding articles it has been endeavored to cover as thoroughly as possible the field of safe working methods to avoid accidents. No doubt there would be almost an entire lack of such accidents were everyone to play absolutely safe at all times, but unfortunately, through circumstances, both controllable and uncontrollable, there are always bound to be some. The best we can strive for is to reduce them to a minimum, and then be prepared to render proper treatment when occasion arises.

First, as stated before, we must, to do this, become thoroughly familiar with approved first-aid methods; and secondly, we must have proper equipment to take care of injuries.

Standard first-aid kits may be procured in a variety of different sizes and contents to meet various requirements. As a good working outfit for ordinary use, the following items are those most commonly required:

Roller bandages in one and two-inch widths.
One, two and three-inch compresses.
Triangular bandages.
Carbolated petrolatum.
Iodine tubes.
Ammonia vaperoles.
Wire gauze splints.
Tourniquet.
Scissors and safety pins.

These articles can be secured from any one of a number of reliable sources, put up in a neat, durable carrying case.

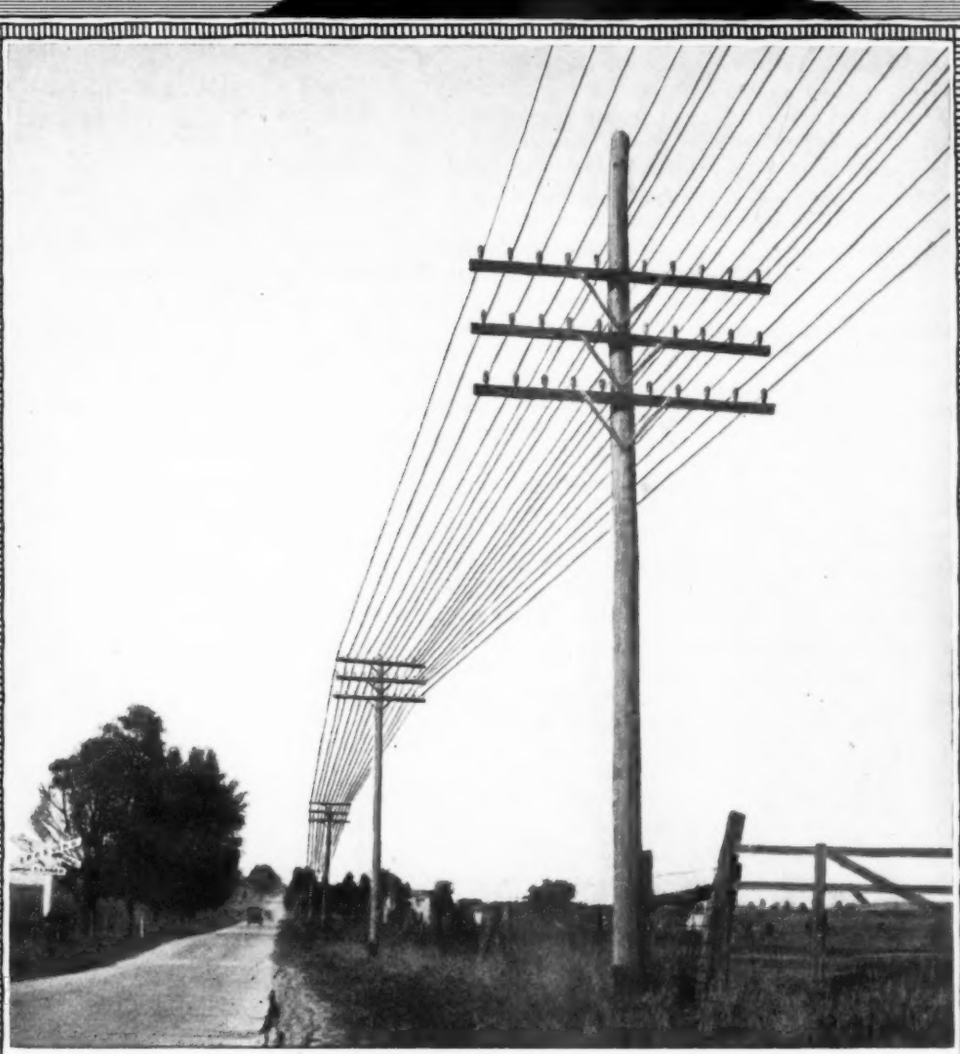
A case of this kind should be a part of the equipment of every motor vehicle a company has in operation, whether it be used by an individual or a construction gang. Not only will they be found extremely useful for the personal benefit of those carrying them but, too, it frequently occurs that those whose occupations are such that they work much along highways, often come on the scenes of accidents, where the injured may be given relief until surgical treatment can be had.

First aid supplies in the cases should be replenished each time anything is used so that there is always a proper and sufficient amount always on hand when needed. Each individual, or foreman, should be responsible for seeing that this is carried out, and all first aid cases should be given a periodical check inspection from time to time by some one in a supervisory capacity to make sure that they are in first-class condition.

First aid training at the best can avail little if, when an accident occurs, the necessary material for treatment is miles removed from the accident.

Assuming that every man in an organization has been trained in first-aid work and given the necessary supplies with which to work, let us consider in just what ways his knowledge may be of practical use.

First, let us take up minor injuries that may later develop into serious trouble.



"P & H Process" Poles in lines of Rushville Co-operative Telephone Co., Rushville, Indiana

What does it mean— "P & H" Pole Service

"SERVICE," to us, is not simply a word. It's a law upon which the whole Page & Hill Co. organization has been built. For a quarter century, it has guided us in perfecting the manufacture of cedar poles, in developing butt-treating processes and thoroughness of inspection, in locating our branch offices and shipping yards to insure prompt shipment. Try us on any cedar pole needs —Northern White or Western Red Cedar, Butt-Treated or untreated.

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When writing to Page & Hill Co., please mention TELEPHONY.

Under this class comes small cuts, scratches and lacerations. The injury may be so slight—for example, a scratch from a piece of copper wire—that at the time we give it little or no consideration, with the result that it becomes infected and develops into a serious case of blood poisoning often resulting in the loss of a hand, arm, or other member, or, perchance, death.

Just a little prevention in these minor cases, by the immediate application of iodine, will in practically every case nullify the element of risk. More serious results frequently ensue from neglecting minor injuries than some of the graver accidents attended by major injuries that get prompt professional treatment, for the simple reason that we are prone to regard the former lightly and as of little consequence.

Then comes the use of practical knowledge in cases of major accidents where medical aid is not immediately at hand. And let us pay particular attention at this juncture to one thing: In all accidents where injuries are sustained that have a serious aspect, the first thing, if by any means possible, is to have a physician summoned. In case of a gang working together, it is usually possible for one member to do this while the others are treating the injuries and making the injured person as comfortable as possible, or preparing him for transportation, as the case may be.

In case of a man whose work is of such nature that he is alone, naturally if he receives an injury that renders him helpless or unconscious, he must perforce be dependent upon some good Samaritan for assistance; but, in case he may come up with an accident to some one else his training gives him a wonderful opportunity to perform a good turn. Even if a person trained in first-aid methods is privileged only once in a lifetime to render aid of such a nature as to save a human life, or to alleviate suffering, the little time and effort necessary to acquire the training will have been worth while.

Among major accidents we will consider such as electric shock, unconsciousness from gas, apparent drowning, serious bleeding—either from arteries or veins—fractures, either simple or compound, and severe burns.

For the first three named the treatment is essentially the same—the proper administration of artificial respiration, with the exception that in the case of a person who has been in the water it is necessary to raise the middle portion of the body to permit the water to run out of the lungs before attempting artificial respiration.

As cases of electric shock and asphyxiation are more or less frequent in telephone construction and maintenance, all employes on work of this character should be especially instructed along this line, for in such cases the first few moments are the vital ones in getting the lungs to resume their functioning. In all cases where artificial respiration is being given, even if there is no apparent sign of life, the work should be continued without relaxation until the victim either becomes conscious or is pronounced dead by a physician.

It is not the thought of this article to go deeply into detailed explanation as to the treatment of injuries, as they are covered thoroughly in the handbook referred to, but rather to sketch briefly some of the injuries encountered and to emphasize the importance of gaining such knowledge and being competent to use it. So, without going into too much detail, some of the other more common injuries it may be necessary to treat will be discussed.

In cases of severe bleeding it is essential to know the proper points on each portion of the body where pressure may be applied to temporarily control the flow of blood, and how to apply an antiseptic bandage that will cover the wound and prevent possible infection. In cases of fractured bones it is necessary to know how to apply splints that will hold the broken bone ends firmly so that they will not work around and tear the tissues with their sharp edges.

In cases of compound fracture, where the broken bone has already pierced the flesh, there may be arterial bleeding that will necessarily have to be controlled by a tourniquet, in addition to placing a bandage and splints. Temporary splints may be made of pieces of board, bark of trees, shovel handles, or similar objects, padded with cloth, grass or any soft substance that may be at hand.

Improvised stretchers may be made, where it is necessary to carry a person, out of coats and pike poles, or bars and shovels. A blanket used with pike poles, or a bar and shovel, will also answer the purpose. One of the real essential things in the practice of first aid is the ability to use to advantage the things which are readily at hand. Ingenuity along this line is a valuable asset in the work.

These are, at the best, illustrations as to why first-aid training is not only essential to every industrial organization, whether large or small, from a common-sense standpoint, as a means of effecting a considerable saving in lost time accidents and a resultant loss in actual dollars and cents, for man-power of the skilled type is a very tangible asset to be taken care of, but from the humane point of view in possessing the necessary knowledge and skill to aid a fellow being in distress.

Let us remember in closing these articles two things: Safety first, last, and all the time. A constant vigilance at all times by each individual, not only for his own safety, but for the welfare of others with whom he works, and a good, practical knowledge of what to do and what not to do in case that an accident does inadvertently happen.

Let every manager give it a thorough trial and see if the result does not more than justify the expenditure. Yes, more than that—pay a big dividend in happy, healthy, robust man-power.

SINGLE TELEPHONE SERVICE IN MEADVILLE, PA.

(*Concluded from page* 23.)

which has now taken place in Meadville, was made possible.

History of Company.

No chapter in the telephone history of Meadville is more interesting than that which deals with the organizing of the original Meadville Telephone Co., which took place in July, 1899. The company at that time was organized by a group of five prominent and public-spirited citizens of Meadville who entered the telephone business for the purpose of securing a reduction through competition with what were then held to be exorbitant telephone rates. This group of telephone pioneers was made up of Otto Kohler, attorney; W. W. Gelvin, insurance representative; the late Thomas Roddy, attorney; R. Ed Ashley, of the Meadville Tribune-Republican, and John Hay, monument dealer. The first president was Thomas Roddy, with Otto Kohler treasurer and R. E. Ashley secretary.

It was not long before the company interested B. G. Hubbell, of Cleveland, and later of the Federal Telephone Co., of Buffalo. This resulted in the permanent organization of the company, and the sale of its franchise later to the company organized by Mr. Hubbell.

The local Independent company was cordially supported by the public of Meadville and it was continuously successful from its beginning.

John H. Wright, of Jamestown, N. Y., who has been the leading spirit in creating the present combination of telephone interests in Meadville, became interested in the Meadville telephone situation in 1904 through H. M. Dickson, and since then has supervised the general management of the Meadville Telephone Co. as a director and as vice-president of the company.

The officers of the Meadville Telephone Co. are: William J. Maddox, president; George W. Phillips, vice-president; John H. Wright, vice-president; Lloyd C. Wright, secretary; H. M. Dickson, treasurer.

The directors are Arthur C. Black, H. M. Dickson, C. C. Johnston, W. J. Maddox, George W. Phillips, L. E. Whiting, John H. Wright and Lloyd C. Wright.

The company's operating staff numbers approximately 75, under the general direction of L. E. Whiting, manager.

The traffic department is in charge of Miss Marie Smith, chief operator, and Miss Minnie Linendoll, assistant. The plant force is headed by D. A. Lawrence, wire chief, and Gordon F. Evert, assistant wire chief.

A Few Facts About Twisted Pair

Paint manufacturers have demonstrated that it costs more to paint a dwelling with cheap paint than it does with a quality product. The cost of applying the paint is the big item.

The same rule applies to drop wire.

As for paint, the labor charge is greater than the cost of the wire. The difference in price between quality wire and cheap wire is slight—but, what a difference in the length of service.

When you purchase a quality wire you are assured of long life, low annual cost, a reduction of maintenance charges and continuous service to your subscribers.

To produce an insulated wire which will have these characteristics requires an insight into the conditions of service.

It takes more than wire, rubber and cotton to make a quality drop wire.

Copperweld drop wire was designed by a telephone engineer of twenty years' experience in the field.

No. 17 Copperweld wire and its insulation are manufactured by companies who have specialized for years on telephone wire and, today, are the largest producers in the world of this type of product.

There are three features that make genuine Copperweld Drop Wire the standard of quality—Experience, Good Material and Careful Workmanship.

The conductor is genuine Copperweld wire made by the Molten Welding Process.

The rubber insulation is compounded with the greatest of care and the very best of materials.

The braid is of strong long fibre cotton yarn—closely woven. The saturating and finishing waxes are the so-called A. T. & T. standard—high-melting point and durable. The twisting of the pair is just right to give a uniform strain on both wires and maintain a uniform twist throughout its life.

The testing is thorough and only coils which meet all of the specification requirements are shipped.

The result of all this care is a standard of quality product, guaranteed by the Copperweld Steel Company and the Electric Cable Company.

No other drop wire has such a guarantee.

Quality is the reason.

Service is the answer.

Insist on genuine Copperweld.

Genuine

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What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Rules Against Magazine Solicitors "Borrowing Service."

The Nebraska State Railway Commission has ruled in the matter submitted to it by M. D. Young, manager of the Republican Valley Telephone Co. at Franklin, that magazine solicitors visiting towns and using telephone service to solicit subscriptions and other business must pay the non-subscribers' call rate.

Mr. Young said that these young women make a deal with a local merchant to give him part of the profits if he will allow them to use the telephone in his store. They take up the time of one operator entirely, and thus interfere with the service, as the smaller cities have no surplus of operators they can utilize for any special rush of business.

The solicitors said that they were, by reason of their deal with the merchant, his employes and were entitled, as he was, to use the service as much as they wished or was necessary. The commission says that they are not employes, that the merchant cannot thus make use of the facilities of a telephone company for his own direct profit in such a manner, and that the company will be upheld in its refusal to give service unless the regular call rate is paid.

Asks Authority to Change Name of Kansas Plant.

D. E. Lanham, formerly an employe of the Gove County Telephone Co., of Grainfield, applied to the Kansas Public Service Commission on July 25 for a permit to operate the exchange under the name of the Grainfield Telephone Co.

In explanation of the change of name and ownership Mr. Lanham enclosed a court order showing he had been awarded the company and plant when he was unable to collect a bill for labor amounting to $394.25.

Minnesota Commission Allows Increased Rates As Specified.

The Lerdal Telephone Co., a corporation with its principal place of business at Clarks Grove, Minn., and engaged in the operation of a local telephone exchange, serving Clarks Grove, Lerdal, and the rural territory tributary thereto, on August 5 was authorized by the Minnesota Railroad & Warehouse Commission to establish and charge a new schedule of rates, effective September 1. There was no opposition voiced against the new rates at the hearing held May 13. The company also owns and operates a toll line between Lerdal and Albert Lea.

The annual reports of the company for several years past show reasonable expenditure in maintenance and operation. Some irregularities exist, however, in the subdivision of expense and in the keeping of the capital account.

Upon review of all the facts, the commission finds the present rates unreasonable and that the schedule of rates and charges petitioned for is fair and reasonable and will not yield more than sufficient revenue to provide for the necessary operating expense, depreciation and a fair return upon the investment.

The present local rate for exchange service is $1.25 per month for multi-party line service. The toll rate to Albert Lea is 5 cents for three minutes.

The new schedule of monthly rates and charges follows:

Four-party line business.....	$2.25	gross
Extension station, business...	.62½	net
Multi-party line, residence or rural	1.50	gross
Extension station, residence or rural	.62½	net

A discount of 25 cents to be allowed on the gross rates if paid on or before the 15th of the first month of each quarter.

Toll rate to Albert Lea: Station-to-station message 10 cents for 3 minutes; person-to-person message 15c for 3 minutes.

Service connection charges:

	Business Stations	Residence Stations
Instrument not in place..	$2.00	$1.50
Instrument in place.....	1.50	1.00

Charges are authorized for outside and inside moves, changes in type of equipment and other miscellaneous items.

Cherokee, Iowa, Voters Reject Northwestern Bell Franchise.

At a special election in Cherokee, Iowa, July 27, the proposed franchise for the Northwestern Bell Telephone Co. was defeated by a majority of 97, out of a total vote of 777.

Under a recent supreme court decision the company is allowed to operate until September 17. The company has not indicated its course of action after that date.

Ask Authority to Examine Books of Bell in St. Louis.

The city of St. Louis on July 28 applied to the Missouri Public Service Commission for an order requiring the Southwestern Bell Telephone Co. to permit an auditor employed by the city to inspect, examine and audit all its books, records, documents and papers.

The application followed the refusal of E. D. Nims, president of the company, to permit the examination, for the cost of which the city has appropriated $2,000. J. M. McShane, accountant, was employed to make the examination for the city.

The city's application to the commission, which was prepared by Associate City Counselor Ferris, says that the city has the right, at any time, to file a petition or complaint, alleging that rates are unreasonable, discriminatory or excessive, and asking a modification or reduction. It is urged that the city has also the right, by inspection of the company's records, to ascertain such information as will enable it to prepare complaints and introduce facts supporting them.

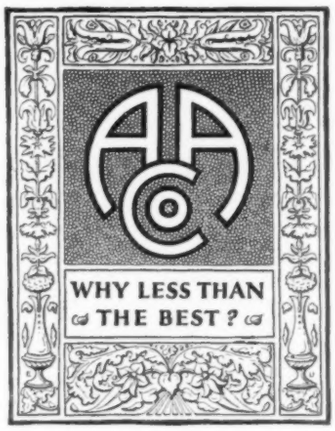
It is also declared that the Bell company failed to file reports showing specific valuations for St. Louis and Missouri, but filed only those for the Southwest generally. By failing to file reports on its St. Louis and Missouri valuations, it is declared, the company has suppressed information declared by law to be public. The application declares that the city has the right, without assigning a reason, to examine the company's books to obtain information.

It is declared the recent increase in St. Louis business telephone rates granted by the commission, which will give the company an added revenue of $894,000 a year, was based on a showing for three months in which the company's expenses were abnormally high and its revenues lower than usual. These were the months of September, October and November last. At the time, when the commission took up the matter last spring, records for several months later were available, but were not included in the showing, it is argued.

Asks Commission to Protect Toll Connections in Red Cloud, Nebr.

F. S. Frisbie, secretary of the Amboy Telephone Co., has filed an informal protest with the Nebraska State Railway Commission against any action on the part of the Farmers Independent Telephone Co., of Red Cloud, or the Lincoln Telephone & Telegraph Co., in consolidating their exchanges at Red Cloud without the present toll connections being maintained.

Mr. Frisbie writes the commission that it is understood in telephone circles in that section of the state that the contract which is to be made by which the Farmers company takes over the Red Cloud exchange



Why Many Companies Need Higher Rates

Is 4.3 per cent a just average return for 434 companies?

A recent analysis showed that 434 companies operating in excess of 200,000 telephones were only averaging 4.3% return on the *cost* —not present value—of their properties.

Such a return is scarcely adequate reward for the risk involved. It cannot hope to attract capital. It makes it virtually impossible to set aside adequate depreciation reserves to meet the emergencies involved in rural line operation. It practically prohibits improvements or extensions of service.

The conditions under which those 434 companies are operating are not peculiar. They are fairly representative of the average situation among the smaller independent companies. They can lead to but one result—extinction of operations, either gradually or suddenly.

Adequate rates are, however, available to a majority of such companies, provided they present their cases clearly and completely to the commissions and to the public.

The first step is to have an accurate determination of the rate base and a provable and disinterested rate study for submission as evidence of your needs. The American Appraisal Company is prepared to make such investigations for you.

Its services are based upon a generation of experience.

Among more than 300 public utility properties that have been appraised by The American Appraisal Company for financing operations, rate cases, or other requirements are:

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Rochester Telephone Corp., Rochester, N. Y.

Northern New York Telephone Corp., Plattsburg, N. Y.

Tri-State Telephone & Telegraph Co., St. Paul, Minn.

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Milwaukee

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Baltimore	Cleveland	Los Angeles	Pittsburgh	Washington
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of the Lincoln company, involves certain toll line discriminations, that the Farmers company is to agree to cut off some of the small connecting companies and to continue to give others service. Mr. Frisbie says the commission should protect all of them in the message routes they have built up and which naturally belong to them.

The Amboy company has toll connections with the Glenwood company at Cowles and also at Guide Rock, and is connected at Red Cloud with the Farmers company, under commission arrangement, and he desires that these connections be retained under any scheme of consolidation.

Authorizes Readjustment of Rates to Remove Marked Inequalities.

The Washington & Western Telephone Co., of Verdigre, has been given permission by the Nebraska State Railway Commission to make a readjustment of rates that results in a decrease in its residence rates and an increase in business rates. The company has just taken over the Verdigre Telephone Co., which had a flat rate of a dollar a month for each class of service. Under the terms of the consolidation the rates of the Washington & Western company were to apply, and this resulted in a marked increase in rates to certain classes and produced a rate situation which displays some marked inequalities.

The schedule, as asked for, gives a lower rate for stockholders than for non-stockholders. The commission says it has frowned upon this method of paying a return on stock, holding that such return might better be realized by the payment of dividends on fair value of the property at the end of the fiscal period, than by way of cut rates. However, in this instance, it seems inadvisable, it says, to interfere with the company's proposal and plans, having in mind the misunderstanding and confusion that would follow.

Interested subscribers were notified, but no protests being received, no hearing was called. The commission approves the following schedule of net rates as more equitable than the old, while yielding but little more revenue: Residence and farm-line stockholders, $1.00; residence and farm line, non-stockholders, $1.25; business, stockholders, $2.00; business, non-stockholders, $2.50.

Needs New Equipment; Requires Additional Revenue.

The Hay Springs Telephone Co., Hay Springs, Neb., reports to the state railway commission that its depreciation fund is exhausted, that it needs a new switchboard, and that it must have added revenues if the service is to be maintained.

It, therefore, asks permission to increase individual business wall service from $2.50 to $3.50 a month; business, desk, from $2.75 to $3.75; party business, wall, from $2.25 to $3.25; party business, desk, from $2.50 to $3.50; individual residence, wall, from $1.60 to $2.25; individual residence, desk, from $1.85 to $2.50; party residence, wall, from $1.35 to $1.75, and party residence, desk, from $1.60 to $2.50.

No change is asked in the farm switching rate of 60 cents a month. It also proposes to give 24-hour service instead of the present limited service with a 15-cent night call.

Hearings Completed in New England Bell New Hampshire Case.

The New Hampshire Public Service Commission worked long hours during the week ending July 25, and finished the hearings on the New England Telephone & Telegraph Co.'s petition for an increase in its New Hampshire rates.

The company officials were highly appreciative of the way the hearings, which were held at Concord, were conducted and of their being allowed to put in their great mass of testimony without interruption, objections, or badgering. "There is no playing to the galleries by this commission," said one of the visitors to a newspaper man, "they are strictly tending to business all the time."

Most of the testimony was figures and statistics, but not on that account uninteresting, even to a layman. Particularly was this true of a study of price levels presented by Professor Kilbourne of the faculty of the Tuck School at Dartmouth College. But when the professor stated that food price levels were slowly subsiding, he was interrupted. "Not in Concord," declared ex-Governor Fred H. Brown, who was married and went to housekeeping a few weeks ago.

Two New York Systems to Be Merged Into One.

The New York Public Service Commission on August 7 approved the construction and operation by the Sullivan Telephone Corp. Inc., of Enes in Sullivan county; in the towns of Deerpark, Mt. Hope, Wallkill and Crawford in Orange county; Shawangunk, Wawarsing, Denning and Herdenberg in Ulster county, and Hancock and Colchester in Delaware county.

The new organization will take over and operate the existing lines of the Monticello Telephone Co. and the Western Sullivan Telephone & Telegraph Co., which have been operating in parts of the territory to be served by the new company. The operation by one company of the two lines will result in improved service and result in more economical administration. The new company plans to improve the existing service and extend its telephone lines into additional territory.

Sand Springs Merger Approved By (Okla.) Commission.

In journal entry No. 1371, cause No. 6796 the Oklahoma Corporation Commission authorizes the Southwestern Bell Telephone Co. to purchase exchanges of the Sand Springs Telephone Co. at Sand Springs and Vern, together with all toll lines and lines connecting the exchanges with the plant of the Southwestern Bell at Tulsa.

Announcement had previously been made that the Southwestern Bell Telephone Co. had purchased these properties from James Thompson subject to approval by the commission.

Application for Desk Set Charge Filed With Commission.

A petition has been filed with the Oklahoma Corporation Commission by E. C. Patton, attorney, Oklahoma City, to permit telephone companies in Oklahoma having 1,250 owned stations or less to charge 25 cents per month extra in addition to the regular rates for service when a desk set instead of a wall set is furnished. The application also requests that the extra charges of companies having now in effect higher rates be not disturbed.

This petition is in accordance with sentiment expressed by members of the telephone division of the Oklahoma Utilities Association at their last annual meeting. The case will be heard during the early part of September, 1925, in Oklahoma City.

Comanche (Okla.) Company's Complaint Against Bell Dismissed.

Application of the Comanche Telephone Co. for an order requiring the Southwestern Bell Telephone Co. to discontinue service to the Western Oil & Refining Co., was dismissed by the Oklahoma Corporation Commission, July 31 in cause No. 6702, order No. 3098.

Sam Hand, owner of the Comanche Telephone Co., alleged in his complaint that prior to September, 1924, he had maintained a toll line, or a clear trunk line, connecting the office of the Western Oil & Refining Co. with his exchange at Comanche, and that subsequent to September, 1924, the Southwestern Bell Telephone Co. built or cleared up from its Duncan exchange a trunk line to the office of such refinery over which it rendered long distance service to the company that had previously been routed over the lines of the complainant.

Mr. Hand claims that this caused him a loss of approximately $40 per month in toll commissions and that installation of this service was made contrary to the provisions of the public necessity act of 1917. He asked that the line be discontinued as a toll line and that the Southwestern Bell Telephone Co. be required to refund toll moneys collected from the Western Oil & Refining Co. to the amount of $500 per annum.

The commission, in dismissing the complaint, held in substance that the line connecting the office of the Western Oil & Refining Co. with the exchange at Comanche is not a toll line, nor is the

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Indeed there are here many manufacturing operations of so delicate a nature that they are carried on entirely under a glass. The filament of a switchboard lamp, for instance, is one-sixth the thickness of a human hair.

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line connecting that office with the Duncan exchange, but they are both regular subscribers' lines; that both concerns collected regular monthly rentals for the services rendered and offered unlimited connection with the line in question to their respective subscribers; that toll business orginated over the lines is incidental and that both the Comanche Telephone Co. and the Duncan exchange of the Southwestern Bell Telephone Co. have served subscribers in and near the vicinity of the Western Oil & Refining Co.'s property for a number of years to the extent that their lines intermingle, each applicant evidently securing the service he desired without protest from the other concern.

State Commission Approves Sale of Penn State to Bell.

The Pennsylvania Public Service Commission on July 28 approved the sale of the property of the Penn State Telephone Co. to the Bell Telephone Co., of Pennsylvania. An objection was filed by the Pennsylvania State Telephone & Traffic Association but the commission dismissed the formal objection. The property of the Penn State company is located in the counties of Blair, Centre, Chester, Clinton, Lancaster, Lebanon, Lycoming, Northumberland, Schuylkill and Union.

Five special features not provided in the agreement of sale in the transfer of property to the Bell company, relating to the form of toll line traffic, were recommended by the state telephone association.

The commission pointed out that confusion would follow adoption of these recommendations, one of which would throw the systems together within a 60-day period. "The testimony clearly discloses that the proposals are not practicable, and in the commission's judgment they are neither necessary nor desirable," the commission pointed out.

Increased Bell Rates Go Into Effect in Rhode Island.

The Rhode Island Public Utilities Commission on July 31 refused to grant the motion of the city of Providence to request the New England Telephone & Telegraph Co. to postpone placing in effect its schedule of increased telephone rates, which it suspended three months ago.

The hearing which is being held has not yet been completed and was resumed on August 10. The increased rates became effective August 1. The new schedule of rates provides for an increase of 26 per cent in the Providence exchange area and an average boost of 13 per cent for the remainder of the state.

The commission explained its action by reiterating the fact so frequently brought out in the hearings, that it has no power to suspend rates for a longer period than three months, and the three months' period expired August 1.

Realizing that the commission had no power to act, the telephone company had offered to act voluntarily in suspending the rates until the hearings are finished. But the company had said it would only act at "the suggestion of the commission." Without this suggestion from the commission, the telephone company indicated that it would allow the higher rates to go into effect, whatever the status of the hearing.

Orders Rural Party Line Company to Extend Line.

Upon the complaint of W. G. Michael to the South Dakota Railroad Commission, the Agate Telephone Co., on August 1, was ordered to extend its rural party line to his residence and furnish him telephone service within 30 days.

The Agate Telephone Co. owns and operates a rural party telephone line, 19 miles in length, connected on a switching basis with the exchange at Edgemont, S. D., and serving 17 subscribers, all of whom are stockholders of the company. The line is a grounded circuit, the wire being strung on native pine poles attached to pitch pine stubs which are set in the ground to a depth of about three feet, the poles being placed about 25 to the mile. Kellogg telephone instruments are used.

The company has operated from the time of its organization upon the assessment basis, all subscribers contributing equally to the cost of construction and each paying a pro rata share of the expense of operation and maintenance. The company has no financial obligations and practically no funds on hand. The directors have recently determined to operate the line on a rental basis and have established a rental rate of $2 per month per telephone.

The complainant, W. G. Michael resides on a rented farm or ranch which he holds on a five-year lease, his residence being located about 1½ miles from the company's line. He declared his intention to reside on this ranch during the term of the lease; that he is in need of telephone service and that he is ready, willing and able to pay the company's established rental in advance. He had negotiated with officers of the company, over a considerable period, regarding obtaining service but had been unable to come to an agreement with them.

At the time of the hearing, Mr. Michael offered to haul the poles and stubs and to set the stubs and, further, to pay six months rental in advance, provided the company would attach the poles to the stubs, string the necessary wire, install a telephone instrument and thereafter furnish service.

The commission ruled that the plan proposed by the complainant was a reasonable one under all circumstances and that the expense would not be unreasonably burdensome to the company. The latter was therefore ordered to furnish the service, provided the complainant, W. G. Michael, hauls and distributes the necessary poles and stubs, digs the holes and sets the stubs used in the construction of the branch of service line and pays to the defendant company 12 months' rental in advance.

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

August 5: Wm. H. Thompson authorized to furnish telephone service in territory outside of the Arroyo Grande exchange of the Pacific Telephone & Telegraph Co., in San Luis Obispo county. The commission has established rates for such service, dividing the territory into two zones. Zone 1 is the territory in general outside of the Pacific company's exchange area, and within a radius of 4½ miles from Arroyo Grande. Zone 2 is the territory outside the 4½ mile radius.

ILLINOIS.

July 14: Order approved suspending until October 15, 1925, proposed rates for telephone service in Kinderhook, Pike county, stated in rate schedule Ill. C. C. 3 of the Kinderhook Switchboard Co. No. 15585.

July 14: Order approved suspending until October 11, 1925, proposed rates for telephone service in Roseville, Warren county, stated in rate schedule Ill. C. C. 3 of the Roseville Telephone Co. No. 15386.

July 14: Order approved authorizing the American Telephone & Telegraph Co. to acquire its pro rata share of 100,000 shares of the capital stock of the Illinois Bell Telephone Co., as provided for by order entered June 18, 1925, case No. 15142; and authorizing American company to acquire at not less than par any additional shares of the capital stock of Illinois Bell company of this issue or heretofore issued that may from time to time be offered to it.

July 29: Effective date of schedule of increased rates of Cropsey Telephone Co. suspended to January 30, 1926.

July 29: Order approved suspending until November 28, 1925, proposed rates of Lexington Home Telephone Co.

July 29: Petitions of cities of Champaign and Urbana and of chambers of commerce of the two cities asking for a rehearing on the increased rate schedules of the Illinois Bell Telephone Co., granted. The petitions for a rehearing contained a clause asking that the raised rates be annulled pending the hearings, but the commission failed to comment on this in granting the petition. The advanced rate schedule went into effect August 1.

July 29: Proposed increased rates for telephone service in Greenview and Middletown and vicinities by the Menard Telephone Co. resuspended to January 29, 1926.

July 29: Proposed increases in telephone rates in Butler, Donnellson, Raymond, Pana, Taylorville, Morrisonville, Edinburg, Owaneco, Stonington, Kincaid, Nokomis, Hillsboro and Litchfield by the Illinois Consolidated Telephone Co. resuspended to January 29, 1926.

July 29: Proposed increased rates for telephone service at Mason City by the Mason City Telephone & Telegraph Co. resuspended to February 28, 1926.

July 29: Proposed increased telephone rates at Jerseyville of the Jerseyville Telephone Co. resuspended to February 28, 1926.

July 29: Proposed increase in telephone rates for lines of the Vermilion County Telephone Co. in outside exchanges suspended until January 29, 1926. The telephone company some time ago filed a petition asking permission to advance rates in

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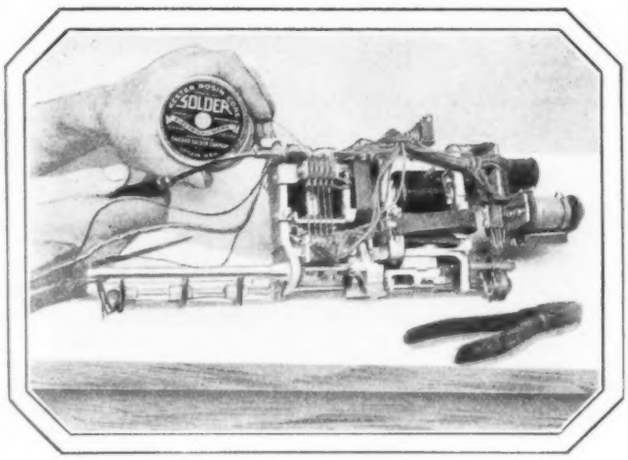

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INDIANA.

July 30: Hearing held on the application of the Indiana Bell Telephone Co. to issue and sell $12,000,000 worth of common capital stock and to use the proceeds in paying debts and buying property. Taylor E. Groninger, special attorney heading the commission's rate inquiry of the company, and James M. Ogden, corporation counsel for Indianapolis, questioned witnesses, but did not oppose the granting of the authority.

The application of the company followed the action of the stockholders in voting to increase the company's capital stock from $15,000,000 to $27,000,000. The stock is proposed to be sold in $100 denominations.

KANSAS.

July 25: D. E. Lanham, formerly an employe of the Gove County Telephone Co. of Grainfield, applied for permission to operate the exchange under the name of the Grainfield Telephone Co.

July 25: The Hiawatha Mutual Telephone Co. filed application for authority to charge 25 cents per month increase in rates to subscribers.

MINNESOTA.

August 5: Lerdal Telephone Co. authorized to establish and place in effect September 1, the schedule of rates and charges it submitted, the commission finding its present schedule unreasonable.

MISSOURI.

July 28: City of St. Louis applied for order requiring Southwestern Bell Telephone Co. to permit an auditor employed by city to inspect, examine and audit all its books, records, documents and papers.

NEBRASKA.

August 5: In the matter of the application of the Republican Valley Telephone Co. of Franklin, for a ruling as to subscriber service, held that itinerant magazine subscription agents, who make arrangements with local merchants for a division of profits, are not entitled to free use of such merchants' telephones, but are subject to non-subscriber call rate.

August 6: Application filed by the Pierce Telephone Co. for readjustment of certain farm-line rates.

August 6: Application filed by Hay Springs Telephone Co. for increase of rates on all classes of service save switching.

August 8: Application of the Washington & Western Telephone Co. for readjustment of rate schedules following consolidation with the Verdigre Telephone Co., approved and new rates made effective September 1.

August 8: Protest filed by Amboy Telephone Co. against any approval by the commission of proposed consolidation of rival exchanges at Red Cloud without steps being taken to preserve all existing toll line connections.

NEW HAMPSHIRE.

July 25: Hearings completed on petition of New England Telephone & Telegraph Co. for increase in rates throughout state.

NEW YORK.

August 7: Approval given the construction and operation by the Sullivan Telephone Corp. of lines in Sullivan county: in the towns of Deerpark, Mt. Hope, Walkill and Crawford in Orange county; Shawangank, Wawarsing, Denning, and Herdenberg in Ulster county; and Hancock and Colchester in Delaware county. The new company takes over and operates the existing lines of the Monticello Telephone Co. and the Western Sullivan Telephone & Telegraph Co.

OHIO.

August 5: The Citizens Telephone Co. of Circleville, asked such amendment of an order to purchase the competing property of the Ohio Bell Telephone Co. as will change the boundary lines between its Circleville and Laurelville exchanges to include in the area of the latter one residence now located in the former area.

OKLAHOMA.

July 31: Petition of Comanche Telephone Co. for an order requiring Southwestern Bell Telephone Co. to discontinue service to the Western Oil & Refining Co. dismissed.

August 1: Southwestern Bell Telephone Co. authorized to purchase exchanges of the Sand Springs Telephone Co. at Sand Springs and Vern, together with all toll lines and lines connecting these exchanges with the plant of the Southwestern Bell at Tulsa.

August 1: Petition filed by E. C. Patton to permit telephone companies in Oklahoma having 1,250 owned stations or less to charge 25 cents per month extra when a desk set instead of a wall set is furnished.

PENNSYLVANIA.

July 28: Approval given sale of property of Penn State Telephone Co. to Bell Telephone Co. of Pennsylvania. An objection was filed by the Pennsylvania State Telephone & Traffic Association but the commission dismissed the formal objection.

RHODE ISLAND.

July 31: Commission refused to accept offer of New England Telephone & Telegraph Co. to voluntarily suspend its proposed rates until after the completion of the hearing. The commission has no power to suspend rates for a longer period than three months and that period expired August 1. The company's schedule of increased rates became effective August 1.

SOUTH DAKOTA.

August 1: Agate Telephone Co. ordered to construct necessary line and install the necessary equipment and facilities and to furnish service to W. G. Michael within 30 days, provided he hauls and distributes the poles and stubs, digs the holes and sets the stubs used in the construction of the branch or service line and shall pay the telephone company not less than 12 months' rental in advance.

Personal and Biographical Notes

W. F. Kniffin, secretary and general manager of the LaRue Telephone Co., La Rue, Ohio, for the past 20 years, has resigned to devote all of his time to his other interests. He is secretary and treasurer of the newly-organized Kniffin-Thompson Construction Co. and is a partner in the Kniffin & Son Electrical Co. **G. D. Dennis,** of Columbus, Ohio, is his successor. Mr. Dennis was formerly with the Kellogg Switchboard & Supply Co., in Chicago but has been more recently in the employ of the Snook-Hillhouse Co. in Columbus.

Muro B. Farwell has recently been appointed commercial superintendent of the Citizens Independent Telephone Co., of Terre Haute, Ind., of which his father, Hart F. Farwell is president. Muro was recently affiliated with the Texas Telephone Co., of Waco, as local manager and commercial superintendent, from which he severed his connections on May 1.

Young Mr. Farwell has had a wide and extensive experience in the Independent telephone field, having been actively engaged in it for 25 years. He was born in Astoria, Ill., in 1884, and after a common school education, entered the employ of the Western Electric Co.

After two years in the Bell manufacturing plant, he went with the Home Telephone Co., of Bloomington, Ill. When this company was taken over by the Kinloch interests in 1905 he was made manager of the properties. He held this position until December, 1911, when he resigned to take charge of the Peoria and Springfield exchanges of the Interstate Independent Telephone & Telegraph Co. In 1913 he became manager of the Wabash Valley Telephone Co. at Paris, Ill., and in 1920 he became associated with the Texas Telephone Co. as commercial superintendent.

His many friends in the telephone field will be glad to learn of his new affiliations.

Hal M. Lytle, associate director of the Illinois Committee on Public Utility Information, has resigned, effective August 15, to become vice-president of the Chicago Rapid Transit Co. Mr. Lytle has been associate director of the Illinois committee since its organization in the spring of 1919 and has become well known among public utility men throughout the country as a result of the creative work he has done.

In his new position Mr. Lytle will have charge of the advertising and publicity of the electric elevated roads of Chicago and their associated systems.

F. W. Webster, who resigned on January 1, 1925, as general manager of the South Atlantic Telephone & Telegraph Co. of Miami, Fla., to become executive manager of Coral Gables, Fla., has been elected vice-president and executive secretary in charge of administration, of the Coral Gables Corp.

Mr. Webster's activities are numerous in Coral Gables. He is, for example, mayor pro-tem in the absence of Dr. Dam-

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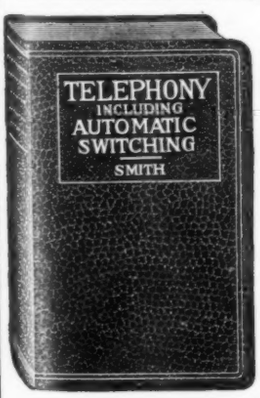

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DEPENDABLE SINCE 1904

mers, although he confessed that Coral Gables is so orderly that municipal matters require little attention. He is likewise president of the Coral Gables Chamber of Commerce, and has been a member since his residence in Miami, of the Rotary Club.

Mr. Webster's many friends in the telephone field will be pleased to know of his most recent advancement, which took effect August 1.

Frank E. Randall, general counsel for the Northwestern Bell Telephone Co., has been elected a vice-president of the organization as a reward for excellent service rendered the company. Mr. Randall's first connection with the telephone industry was as secretary and counsel for the Zenith Telephone Co. at Duluth, Minn., and when it was taken over by the Northwestern Bell, he entered the latter's service.

L. J. Corbett, who has been the supervisor of methods in the general office of the Northwestern Bell company at Omaha, Neb., has been appointed division commercial supervisor, with headquarters at Minneapolis, Minn.

Obituary.

Harry D. Critchfield, one of the most prominent of Independent telephone pioneers, was killed August 7, when he stepped into an open elevator shaft in the Stevens building, Chicago, and plunged 17 stories to the basement. He had been a passenger on an ascending elevator and stepped out on the 17th floor to allow others in the car to pass out. The operator started the car before the doors closed and, without realizing that the elevator had gone up, Mr. Critchfield stepped through the open doors.

Ever since the inauguration of the Independent telephone movement, Mr. Critchfield had been active in it. He was a director of the United States Independent Telephone Association at the time of his death, and had served as a director of the various national Independent associations continuously since 1897, as well as occupying other important positions.

Mr. Critchfield was born in Knox county, Ohio, in 1862. He was admitted to the bar and practiced law at Mt. Vernon, Ohio, for some six years until 1895 when he assisted in organizing the Mt. Vernon Telephone Co. and in building its plant. This was one of the five pioneer Independent plants in Ohio and it began giving service July 1, 1895.

In July, 1895, he was elected secretary of the Ohio Independent Telephone Association. He served as general counsel of the national Independent organization from 1896 to 1902. In this position he was associated with other counsel in the preparation and trial of the famous Berliner patent case, which freed the carbon transmitter to public use and greatly strengthened the Independent cause.

In 1898 Mr. Critchfield became general counsel for the Federal Telephone Co. at Cleveland. During this time he organized the Columbus Citizens Telephone Co., the Dayton Home Telephone Co. and numerous other Independent telephone companies. He was also interested for some three years in the development of the Everett-Moore properties as general counsel.

From December, 1902, to April, 1905, he was general counsel for the Automatic

The Late Henry D. Critchfield, One of the Early Independent Telephone Pioneers, Was Active in Field for 30 Years. He Was a Director of the Successive National Independent Associations from 1897 to Time of His Death.

Electric Co. at Chicago, having charge of its legal matters and certain other features of its development. During his connection with the company at this period installations of automatic equipment were made at Columbus and Dayton, Ohio; Grand Rapids, Mich.; Los Angeles, Calif.; Lincoln, Neb.; Sioux City, Iowa; Wilmington, Del., and other places.

In March 1906, Mr. Critchfield organized the Milwaukee Independent Telephone Co. and later served as president of the Wisconsin Independent Telephone Association.

In 1908 he again became general counsel of the national Independent association and assistant to President Frank H. Woods. In this position Mr. Critchfield was called upon to represent the Independent interests in matters before legislatures and in relation to franchises. There were several big fights; sometimes he had to be not only general but staff, engineer corps and all the rank and file there was.

With the legislative sessions over, Mr. Critchfield felt free to resign and again became associated with the Automatic Electric Co. in the summer of 1909, in a general advisory capacity, also having charge of the contract department for sales of apparatus in the United States and Canada. He was active as general sales manager until 1916 when he became special sales representative of the Automatic Company. In 1922 he retired, except in an advisory capacity, in order to give more time to personal affairs. He was associated with the Oil Wells Renewal Co. of Chicago since then but gave up this enterprise several months ago to take over oil development work in the Oklahoma oil fields.

Mr. Critchfield is survived by his widow, Mrs. Frances Critchfield and a sister, Mrs. Elsie McDonald of Urbana, Ohio. Funeral services were held in Chicago on August 10 and interment was at Roschill Cemetery, Chicago.

The tragic death of Mr. Critchfield marks the passing of a man who had been in the front ranks of the Independent movement since its beginning—one who was a fighter and was ever to be found in the midst of the conflict. His name and his accomplishments for the Independent cause will be long remembered.

Lester S. Parker, president of the Capital Telephone Co., Jefferson City, Mo. died suddenly July 25 in the Mayo Brothers Hospital, Rochester, Minn.

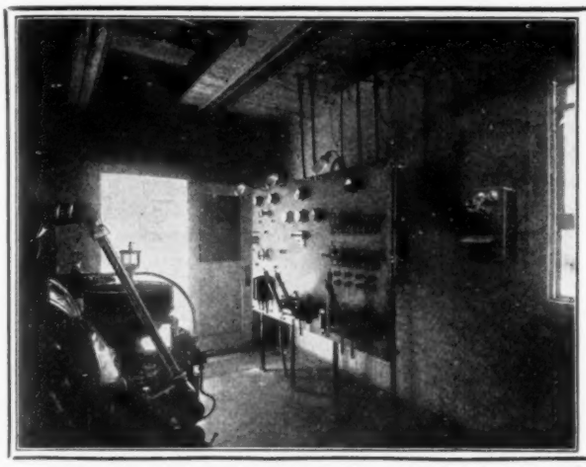
Mr. Parker was a many-sided man, being a successful business man, artist, author, lecturer, traveler and a loyal church worker. He was widely known and highly respected not only in Jefferson City but through the state as well.

He was born in Worcester, Mass., October 7, 1860. In that city he attended college and was a member of the Massachusetts Natural History Association. Later he entered Baltimore College, Baltimore, where he graduated, training himself at the time for the practice of the law.

He moved to Salina, Kans., and lived there five years following his profession and engaging in the business of farming, sheep and cattle raising. He started in the shoe business when he was 34 years of age, but in it he made a great success. He became a practical salesman. In 1895 he organized The L. S. Parker Shoe Co. in Jefferson City. The business became nation-wide and was sold to a large Chicago corporation. Mr. Parker then turned his attention to a variety of interests.

During the administration of Governor Frederick D. Gardner Mr. Parker organized, from the bottom up, the whole system of industries in the state prison, having been named without solicitation for that responsible task by two governors and two prison boards. He was also a writer both of prose and poetry, a composer of music and an excellent musician himself.

There were few community activities that he did not have a share in, and he was a frequent speaker before commercial, civic and church organizations.



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The illustration shows one of the many FEDERAL STANDARD TELEPHONES installed in the power houses of the U. S. Lighthouse Service.

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With pardonable pride the Gray Telephone Pay Station Co., with its main office and works at Hartford, Conn., lays just claim to being the first builders of pay station equipment in the world, in its handsome new catalog just off the press. In 1888 the company brought out the first device for the collection of telephone charges without the services of an attendant. Previous to that time nothing in the form of a practical pay station had ever been produced.

Not only is the company a pioneer in the field of pay station equipment, but it has been constantly studying the changing problems connected with its lines of manufacture and anticipating the requirements.

All of the patents which the company owns—more than 80 in number, with others pending—cover inventions of primary character. Several of them have been sustained by courts of final jurisdiction in patent cases. They were not only found valid, but were unanimously declared to cover pioneer inventions.

The fact that William Gray—inventor of the first manual pay station and one of the organizers of the company—was the pioneer inventor of automatic pay stations as well, won for the company an enviable reputation, which it continues to hold.

"Deposit five cents, please"—or the reminder, "I do not get the signal for your nickel," or some similar phrase—is one of the many commonplaces of life. But back of this and other simple conveniences which the public takes as a matter of course is the brain, the labor and the resources of years.

On one occasion, back in 1887, when the telephones in this country numbered a few hundreds of thousands instead of millions, and public telephones were practically unknown, William Gray, natural inventor and machinist, needed a telephone very badly. And so the coin box was conceived by him through accident—and developed by energy and perseverance.

Mr. Gray was born in the small, quaint Connecticut village of Tariffville on December 7, 1850, the son of a bridge builder. Much of his inventive genius and mechanical skill was perhaps inherited from his father.

His father's work having necessited the removal of the family to Boston about four years later, the lad attended school in that eastern metropolis and eventually entered the drug business.

Baseball was his star hobby. While watching an exciting game one day, he witnessed the hard sphere fly out of the pitcher's box into the catcher's stomach Baseball had its perils then. Soon after this incident, Gray was granted letters patent to an inflatable chest protector.

His interest in baseball and his inventive mind led to his acquaintance and friendship with Charles Soby, wealthy Hartford tobacco grower, manufacturer, merchant and baseball magnate.

For some time Mr. Gray was employed with Colt's Patent Fire Arms Mfg. Co.

George A. Long, Survivor of Four Pioneers in Pay Station Equipment, and General Manager of Original Firm.

where Amos Whitney was also employed at one time. After Mr. Whitney had associated himself with Francis A. Pratt in the partnership, Pratt & Whitney—now one of the most prominent machine tool builders in the country—Mr. Gray joined them as head of the polishing department.

After Mr. Gray had been granted patents on the first telephone pay station he and Charles Soby took up the question of its manufacture with Amos Whitney. The latter displayed an active interest in the new invention and the making of the first model was assigned to Geo. A. Long, then an apprentice pattern maker 16 years of age and now general manager of the Gray Telephone Pay Station Co.

Shortly thereafter the Gray Telephone Pay Station Co. was organized by Messrs. Gray, Whitney, Soby and Long. Mr. Whitney served as president of the company from 1892 to 1920; Mr. Gray as general superintendent from 1891 to 1902, and Mr. Soby as secretary-treasurer from 1891 to 1921.

Secretary and General Manager George A. Long is the only one of the quartette of men who has survived to witness the complete fruition of their efforts in the field of public telephony.

With this outstanding mechanical genius Mr. Long has been an outstanding factor in the development of public telephony. As previously mentioned, he really "fell" into his life work through having been chosen to build the first model of Gray's invention when he was only 16 years old. And the insight, aptitude and intellect he displayed in his early work have been the foundation on which the Gray Telephone Pay Station Co. has been reared.

From his parents—George S. Long, a noted inventor, and Mary E. Brockway, daughter of one of Connecticut's renowned judiciary—George inherited his aptitude for technique and his keen-witted intellect.

He spent much of his early life with Pratt & Whitney, and a little with a few other concerns, but practically his entire fruitful and creative life has been devoted to the telephone pay station. He has been granted more patents on pay telephone apparatus than any other single person.

Among Mr. Long's more prominent inventions are the first single-slot coin collector, the first three-slot and the first portable coin collector. Then he developed the combined telephone and pay station—the compact type—2,000 of which, then especially designed, formed the Wanamaker installation in Philadelphia, the largest in the world.

Mr. Long also provided the first automatic, multi-coin prepay stations. Of these, over 60,000 are in use in New York City alone—and their installation has become almost universal. As early as 1905, 50 of his prepayment machines were put to good use at Fall River, Mass., on the Strowger automatic telephone system.

His activities and achievements in the telephone field have gained for him recognition as an eminent authority—which is doubly attested by special honors conferred upon him by the United States and Japanese governments.

From very modest beginnings the Gary Telephone Pay Station Co. has grown ever larger and more important until today its products are used throughout the length and breadth of the world to the exclusion of others.

In addition to the type 50-G pay station, approved as standard by the American Telephone & Telegraph Co., and types 75 and 76 approved by the Automatic Electric Co. for use with Strowger automatic equipment, the company manufactures prepay and postpay equipment for every conceivable use.

Its new catalog is a handsome publication of 160 pages, profusely illustrated. In

addition to reviewing the history of the company and the development of pay station equipment, as briefly summarized in this article, it presents descriptions and illustrations of the many types of machines manufactured. Views of the various departments of the company are also shown.

The present official staff includes in addition to Secretary and General Manager Long: President Alfred Spencer, Jr.; vice-president and treasurer, Clarkson N. Fowler, and assistant treasurer, Edward A. Hagey.

Deny Aim at Monopoly of Telephones in Belgium.

Representatives of the International Western Electric Co. and the Siemens-Halske interests of Germany have denied the statement made by Senator Fraiture of Belgium in the Brussels Parliament on July 29 that these American and German manufacturers were trying to get control of the Belgian telephone industry.

It was pointed out that there is no agreement between Western Electric and Siemens-Halski other than that existing for years, which provides for an exchange of patents and experience.

Senator Fraiture warned his country against a monopoly in connection with the construction of a telephone cable between Lapanne on the North Sea and Herbesthal, near the German-Belgian border, the work to begin in January.

Dr. K. G. Frank, representative in New York of the Siemens electrical interests, said it was ridiculous to say that a monopoly of the Belgian telephone system was planned or even intended.

"The Siemens-Halske people have no agreement with Western Electric, so far as I know, with regard to telephone cable construction in Belgium; in fact, I fail to see how there could be such an agreement legally."

At the offices of the International Western Electric Co., in New York City it was said that the company had a Belgian subsidiary, known as the Bell Telephone Mfg. Co., located at Charleroi, but the marketing of electrical and telephone apparatus in Belgium, as in other countries, was on a royalty basis made possible through patent and experience agreements. No agreement covering the construction of the proposed cable has been made it was said.

Prices in the Metal Markets.

New York, August 10—Copper—Firm; electrolytic spot and futures, 14¾@14⅞c. Tin—Easy; spot and nearby, $59.00; futures, $58.75. Iron—Easy; No. 1 northern, $19.50@20.00; No. 2 Northern, $19.00@19.50; No. 2 Southern, $18.00@19.00. Lead—Firm; spot, 8.90@9.25c. Zinc—Easy; East St. Louis, spot and futures, 7.57@7.60c. Antimony — Spot, 18.00@18.25c.

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Automatic Satellite Exchanges for South Wales.

Strowger automatic telephone facilities have just been extended by the British post office in the Newport area of South Wales. The automatic exchange at Newport itself now serving some 2,400 subscribers and equipped by the Automatic Telephone Mfg. Co., Ltd., Liverpool, as far back as 1915, was one of the earliest Strowger exchanges to be put into service in Great Britain.

The original installation was completed soon after the outbreak of the war and before the disorganization caused by the subsequent demand for men and munitions held up the further development of the system.

The success of the original Newport installation has created a demand for equal facilities in outlying districts, and this is now being met by the opening of two new Strowger exchanges at Risca and Cwmbran, respectively. These are satellite exchanges of Newport and will operate in conjunction with the Strowger equipment at the main exchange.

Both installations are of the rotary P. B. X. type, comprising single units, that at Risca being equipped with 57 subscribers and three coin-box lines, while the Cwmbran unit boasts 76 subscribers and four coin-box lines.

Although the system is four-digit in both cases the local line switch units are only equipped with rotary line switches, connectors and repeaters, the first and second group selectors being located at the Newport main exchange. Thus in making a local call in either Risca or Cwmbran the route will be via the local rotary line switch and repeater to Newport, where, after passing through the first and second selectors and main exchange repeater, it will be diverted back to the local connector and there completed.

The completion of these Newport satellite exchanges marks another step in the progressive program of British Post Office automatic telephone development by which areas surrounding a central main Strowger exchange will eventually enjoy full automatic service.

As in the case of the original Newport installation, the Strowger equipment for Risca and Cwmbran exchanges has been manufactured and installed for the post office by the Automatic Telephone Mfg. Co., Ltd., Liverpool.

Lamonte, Mo., Exchange Is Undergoing Rehabilitation.

The Central Missouri Telephone Co., of which M. L. Golladay is president, and general manager, has purchased a building to house its Lamonte exchange. A new switchboard has been installed in the new quarters and an all cable outside plant is being installed.

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